The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]*

No. 2262.—VOL. XLVIII. LONDON, SATURDAY, DECEMBER 28, 1878. [WITH SUPPLEMENT.] {PRICE ... PER ANNU...

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,
AND MINING SHARE DEALER,
No 1 FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Banks, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

BUSINESS negociated in Stocks and Shares not having a general market value.

ACCOUNTS OPENED FOR THE FORTNIGHTLY SETTLEMENT

A Daily Price List, issued at 5 P.M., giving latest Quotations up to close of Market, and every Friday a general List containing closing prices of the week.

MINES INSPECTED.

BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUSTELL.

SPECIAL DEALINGS in the following, or part:—

20 Bettws-y-Coed.	10 Hultafall, £3.	50 Pestarena, 4s.
30 Chapel House, £2⅝.	80 Javali, 5s. 9d.	30 Parys Moun., 8s.
50 Chontales, 12s. 6d.	25 Leadhills, £2 1s. 3d.	10 Roman Grav., £6⅝.
10 Colorado, £1⅝.	30 Llanrwst.	50 Rookhope, 7s. 6d.
10 D'Eresby Consols.	50 Morfa Du, 17s. 3d.	250 Talybont (offer wtd.)
25 East Van, £2⅛.	50 Pateley Bridge.	15 Tankerville, £3.
20 Flagstaff, 6s.	60 Penstruthal, 4s. 6d.	

SPECIAL BUSINESS in PARYS MOUNTAIN and MORFA DU.

. SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.

RAILWAYS—FOREIGN BONDS.—SPECIAL BUSINESS.
Fortnightly accounts opened on receipt of the usual cover.
JAMES H. CROFTS, 1, FINCH LANE, LONDON.
ESTABLISHED 1842.

MR. W. H. BUMPUS, STOCK AND SHARE BROKER,
AND
MINING SHARE DEALER,
44, THREADNEEDLE STREET, LONDON, E.C.
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.

RAILWAYS, BANKS, FOREIGN and COLONIAL BONDS, TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.

Accounts opened for the Fortnightly Settlement.
A Stock and Share List free on application.

MR. BUMPUS has SPECIAL BUSINESS in the undermentioned:—

30 Aberdaunant, 4s.	25 Eberhardt, £3 8s. 9d	25 New Quebrada, 32s.
40 Birdseye Creek.	40 East Caradon, 4s.	10 Pateley Bridge, 21s. 6
25 Blue Tent, £2¾.	30 Frontino, 36s. 6d.	40 Port Phillip, 10s. 6d.
70 Bodidris, 18s.	20 Frongoch, £2½.	75 Parys Mount., 8s.
5 Cape Copper, £29¾.	5 Great Laxey, £17⅞.	100 Pestarena, 3s. 6d.
50 Colorado, 32s.	60 Gold Run, 7s.	60 Penstruthal, 3s. 9d.
20 Chicago, 16s. 6d.	100 Glenroy, 12s.	10 Richmond, £11¼.
100 Chontales, 12s.	50 Hultafall.	50 Rookhope, 8s.
15 Devon Consols, 29s.	40 Javali, 5s. 9d.	15 Roman Grav., £6 11 3
40 Derwent.	70 Kapanga, 12s.	£200 St. John del Rey,
60 Don Pedro, 8s. 6d.	25 Leadhills, 43s.	10 So. Frances, £6⅝.
2 Dolcoath, £28¼.	30 Last Chance, 11s. 6d.	20 Tankerville, £2⅞.
20 East Van, 30s.	50 Marke Valley, 16s. 6d.	5 Van, £17⅝.
10 East Pool.	40 Neuchatel Rock.	25 Wh. Grenville, £2¾.

GAS SHARES.—SPECIAL BUSINESS.
BANK SHARES.—SPECIAL BUSINESS.
RAILWAYS.—SPECIAL BUSINESS.

In consequence of the recent heavy depreciation in all classes of Securities, Investors may now purchase really sound Stocks at a considerable advantage. Mr. BUMPUS undertakes every description of Stock Exchange business, and is in a position to give reliable information and advice to intending Investors and others.

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

WILLIAM HENRY BUMPUS, SWORN BROKER.
Offices: 44, Threadneedle Street, London, E.C.
BANKERS—The NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

MR. E. J. BARTLETT, BRITISH AND FOREIGN STOCK AND SHARE DEALER,
No. 30, GREAT ST. HELEN'S, LONDON, E.C.

Post free, One Shilling, Eleventh Edition,
"HOW TO INVEST"
Forwarded on application.

MR. THOMAS THOMPSON, JUN., STOCK BROKER,
1, PALMERSTON BUILDINGS, BISHOPSGATE STREET,
LONDON, E.C.

Mr. THOMPSON transacts business in every species of Stock Exchange and Mining securities.

Mr. THOMPSON affords reliable information to investors, and can give, when desired, a list of first-class Stocks and Shares, yielding 4 to 10 per cent. dividends upon present prices.—Mr. THOMPSON'S weekly Circular may be had on application.

MESSRS. JONES AND HOUSTON, 25, CROSBY HALL CHAMBERS, LONDON, E.C.

Do business expeditiously and on most advantageous terms, free of commission, in Railway and Government Stocks, Gas, Colliery, Tramway, and Mining Shares, and every class of Investments and Securities.

DON PEDRO Shares are in the ascendant, as also PANT-Y-MWYN and RHYD ALYN, and we can strongly and boldly recommend them for a great advance in price. We have important and *bona fide* information to communicate touching these properties.

Bankers: London and Provincial.

WILLIAM B. COBB, STOCK AND SHARE DEALER,
62, CORNHILL, LONDON, E.C.
Bankers: The Alliance Bank (Limited).

WILLIAM GABBOTT, STOCK AND SHARE DEALER,
8, DRAPER'S GARDENS, LONDON, E.C.
Bankers: The National Provincial Bank of England.

MR. GEORGE BUDGE, STOCK AND SHARE DEALER
9, GRACECHURCH-STREET, LONDON, E.C. (Established 26 years)
ALL BUSINESS TRANSACTED FREE OF ANY CHARGE FOR COMMISSION.
Notice to Investors and Speculators.

Mr. BUDGE has SPECIAL BUSINESS in—

Aberdaunant.	27 Grogwinion, £1⅝.	60 Pestarena, 3s. 9d.
Birdseye Crk., 15s. 6d	100 Gold Run, 5s.	100 Rookhope, 7s.
Blue Hills, 13s. 6d.	100 L.X.L., 3s. 6d.	105 Tamar Silver-lead and Fluor-spar.
Chontales, 10s. 6d.	75 Llanrwst.	
Cedar Creek, 4s. 6d.	85 Ladywell, 16s. 9d.	27 Wheal Grenville.
Chapel House.	7 Minera.	20 Wheal Jane, £2.
Cambrian.	40 Monydd Gorddu.	25 Wheal Uny, 12s.
Cakemore, £3 8s. 9d.	15 North Busy, £3⅜.	55 W. Wye Valley.
Carn Brea, £30¼.	25 Pennant.	120 Yorke Penin., 3s. 3d.
Devonport and Tiverton Brewery.	150 Penstruthal, 3s. 6d.	25 Wye Valley, £2⅞.
Exchequer, 4s.	5 South Frances.	80 West Chiverton, 32s.
East Caradon.	50 Santa Barbara.	25 West Frances.
	100 So. Roman Gravels, 4s	100 Bodidris.

BUYERS or SELLERS of any of the above, or holders of any Stocks or Shares readily marketable, will do well to apply to Mr. BUDGE.
SPECIAL BUSINESS in Frongoch shares as Buyer or Seller.

BRITISH AND FOREIGN MINES.

SHAREHOLDERS and INVESTORS desirous of PURCHASING or SELLING SHARES in COPPER, TIN, LEAD, GOLD, or SILVER MINES can do so at market prices, and obtain information regarding the same on personal application, or by letter, of—

MESSRS. PETER WATSON AND CO.,
54, OLD BROAD STREET, LONDON, E.C.
Telegraphic Messages punctually attended to.

MR. ALFRED E. COOKE,
STOCK AND SHARE DEALER,
76, OLD BROAD STREET, LONDON, E.C.
ESTABLISHED 1853.

1879.—For PROFITABLE SELECTIONS, send for the "INVESTORS' GAZETTE" of next Friday. Post free Three Stamps; quarterly subscription, 2s. 6d.

ALFRED E. COOKE, 76, OLD BROAD STREET, LONDON.

MR. JAMES STOCKER, STOCKBROKER,
2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.
Mr. STOCKER Transacts Business in all Stock Exchange Securities.
[Established 1848.]
BANKERS: LONDON AND WESTMINSTER.

FERDINAND R. KIRK, 5, BIRCHIN LANE, LONDON, E.C.

"THE WEEK."—A SEPARATE EDITION from that which appears in the *Mining Journal* is published every Wednesday evening, containing "Notes and Hints on the Stock Markets," with Closing Prices. May be had on application.

COLLIERIES.—Special Business in Bilson and Crump, Chapel House, Cardiff, and Newport Abercarn.

MISCELLANEOUS.—Investors should notice the low prices reached by General Credit, Hudson Bay, National Discount, Mercantile Bank, Credit, Brighton Aquarium, and Mexican Railway.

Bankers: London and Westminster, Lothbury.

MR. R. TREDINNICK, DEALER in STOCKS and SHARES,
CONSULTING AND ADVISING MINING ENGINEER,
7, UNION COURT, OLD BROAD STREET, E.C.

MR. JOHN B. REYNOLDS, STOCK AND SHARE DEALER,
70 AND 71, BISHOPSGATE STREET WITHIN, LONDON, E.C.
Established Twenty Years.
Bankers: London—City Bank.
Cornwall—Messrs. Tweedy, Williams, and Co., Redruth.

WILLIAMS AND COMPANY,
DEALERS in STOCKS and SHARES.
82, BISHOPSGATE STREET, LONDON, E.C.

MESSRS. J. TAYLOR AND CO.,
MINING ENGINEERS AND INSPECTORS,
86, LONDON WALL, LONDON, E.C.,
Have Agents in England, Scotland, Wales, and on the Continent.
FOR SALE, 100 VIRNEBERG SHARES, at 35s.

MESSRS. EKINS AND CO.,
STOCK AND SHARE DEALERS,
14, QUEEN VICTORIA STREET, LONDON, E.C.
BUYERS of South De Eresby Shares. SELLERS of Tamar Shares at close prices. Bankers: Metropolitan.

ABBOTT AND CO.,
STOCK AND SHARE BROKERS,
9, UNION COURT, OLD BROAD STREET, E.C.

MESSRS. ENDEAN AND CO., 85, GRACECHURCH STREET
LONDON, E.C., STOCK AND SHARE DEALERS.
Established in 1861.
Bankers: Barclay, Bevan, and Co., and London and Westminster Bank, Lothbury.
English and Foreign Stocks and Shares and all other Securities dealt in for cash or account.

LLANRWST MINE.

Special business in these shares at close prices. Buyers and sellers should communicate with us.

MESSRS. W. REYNOLDS AND CO.,
STOCK AND SHARE DEALERS,
57, GRACECHURCH STREET, AND TALBOT COURT,
LONDON, E.C.

MR. W. MARLBOROUGH, STOCK AND SHARE DEALER,
29, BISHOPSGATE STREET, LONDON, E.C. (Established 22 Years).
can sell the following SHARES, at prices annexed:—

50 Cambrian, £1 15s.	20 Leadhills, £2¼.	20 Pateley Bridge, £1⅛,
25 Colorado, £1 16s. 3d.	Javali, 7s.	100 Penstruthal, 3s. 6d.
25 Cakemore Col., £3 15s	15 Llanrwst.	10 Richmond, £11 2s. 6d.
50 Don Pedro, 8s. 9d.	30 Morfa Du, 18s.	50 Rookhope, 6s. 6d.
East Van, £2 2s. 6d.	10 Monydd Gorddu, 45s.	50 Rossa Grande, 1s. 6d.
Eberhardt, £3⅝.	20 N. Zea. Kap., £¼.	100 So. Roman Grav., 3s.
200 Exchequer, 4s.	30 N. Quebrada, £1 13s 9	10 Tankerville, £2 12s 6d
20 East Caradon, 4s.	20 Pant-y-Mwyn, £3 8s.	25 Tyn-y-Fron.
Frontino, £2.	100 Pestarena, 3s. 9d.	10 W. Chiverton, £1 10s.
10 Glenroy, 10s. 9d.	40 Port Phillip, 10s. 3d.	100 Yorke Penin., 3s. 9d.
	100 Parys Mountain, 7s.	

SPECIAL BUSINESS in Frongoch and Lead Era.
Shares bought and sold at net prices. Telegrams promptly attended to.

MR. JOHN L. M. FRASER
(Fourteen years at the Great Minera Mines),
CONSULTING MINING ENGINEER AND FINANCIAL AGENT,
OFFICE,—59, HOPE STREET, WREXHAM,

Has Special Business in MINERA, BRITISH SILVER LEAD, PLAS-DDU, and PANT-Y-MWYN, which he strongly recommends for investment, and a rise—several important discoveries expected daily.

Visits the Mining Districts of Minera, Mold Mountain, D'Eresby Mountain, British Silver-lead, and others, monthly; and will be happy to inspect any property on his clients' behalf. Instructions should be posted not later than Tuesday's post.

MR. DAVID COWAN,
CONSULTING MINING AND MECHANICAL ENGINEER,
AND LICENSED VALUATOR,
58, RENFIELD STREET, GLASGOW.

Investigations, Reports, and Valuations made of Coal, Iron, Slate, Pyrites, and other properties at home and abroad. Enquiries for Road and Railway Materials, Mining Plant, Pipes, Castings, &c. Plans, &c., of the most modern and economical mining appliances, fittings, and arrangements.

I have been long acquainted with the principal Coal and Ironworks in the North, with the Slate Quarries in North Wales, and for many years was Chief Engineer of the Tharsis Mines, Works, and Railway in Spain.

MR. TIMOTHY HUGHES
MINING AGENT AND SHAREDEALER,
59, SHEL STREET, LIVERPOOL.

The recent discoveries at the Prince Patrick Mine (see reports in *Mining Journal* of Oct. 12 and Nov. 2) clearly indicate that the mine will soon again be paying dividends. Intending investors should apply for shares before they advance to former prices.

Particulars can be obtained on application, as above.

MR. CHARLES THOMAS,
MINING AGENT, STOCK AND SHARE DEALER,
3, GREAT ST. HELEN'S, LONDON, E.C.

MR. ALFRED THOMAS
MINING AGENT, AND STOCK AND SHARE DEALER.
10, COLEMAN STREET, LONDON, E.C.

"INVESTMENTS AND SPECULATIONS" for 1878
Price Sixpence.

MR. EDWARD ASHMEAD, 62, CORNHILL, LONDON,
LONDON MINE AGENT, ACCOUNTANT, AND AUDITOR.

FOR SALE, the WHOLE or PART:—

40 Wh. Agar, £4½.	100 Santa Barbara, £1 15s	100 Tyn-y-Fron, £1 p., 30s
50 Hultafall, £2¾.	50 Pant-y-Mwyn, £3 3s.	200 ditto, 5s. p., 10s
40 East Van, £2 2s. 6d.	18 Hornachos (off. wd.)	

WANTED TO BUY—50 to 100 Glyn, at a fair price; 10 to 20 Monydd Gorddu.
Address, H. WILKINS, 3, Heybourne Villas, Tottenham.

WANTED,—SECOND-HAND MACHINERY:—
The Directors of the FLORENCE SILVER-LEAD AND BLENDE COMPANY (LIMITED) are desirous of RECEIVING ESTIMATES for the SUPPLY of the following SECOND-HAND MACHINERY, delivered at the MINE, near LISKEARD:—
A 60 in. PUMPING ENGINE, 10 ft. stroke, with all connections, complete.
TWO BOILERS for ditto.
A 20 in. WINDING ENGINE, complete, with cage.
ONE BOILER for ditto.
About 100 yards of 15 in. PUMPS.
Communications to be addressed to the Secretary, at the Company's London Offices, 7, Queen Victoria-street, E.C.

MINING AGENT OPEN TO A RE-ENGAGEMENT.
Has had considerable experience in METALLIC MINING in CORNWALL and the NORTH OF ENGLAND; also 15 years on the Continent. Speaks English, French, German, and Spanish, and has had charge of mines for many years. Practically acquainted with the most modern dressing apparatus, the most economical pumping and winding engines, boring machines, smelting, and general steam and water appliances. Inspections undertaken; plans of mines and assays carefully executed. Unexceptionable references.
Address, Mr. NANCE, 32, Stanly-street West, North Shields, Northumberland.

CAPTAIN ABSALOM FRANCIS, MINING AGENT,
ENGINEER, AND SURVEYOR, GOGINAN, ABERYSTWITH.
FOUR MINES CERTAIN FOR A RISE

Advice gratis on Dividend Mines not paying over 15 per cent. per annum; also on Progressive Mines, when prices in 1879 do not advance 100 per cent. if bought in 1878. A fixed charge after 1878 for advice.

An estimate of Probable Costs, Returns, Profits, and Losses for 1879, of every Mine at work in Cardiganshire, has been carefully summarised, and will be forwarded on receipt of £1 1s.

MAP OF CARDIGANSHIRE MINES, with Position, Returns, and Depths, revised to end of 1878, post free, 2s.; also from Mr. H. FRANCIS, 259, Gresham House, E.C.

MR. J. S. MERRY,
ASSAYER AND ANALYTICAL CHEMIST,
SWANSEA.

ANTIOQUIA (FRONTINO) COMPANY (LIMITED).

Notice is hereby given, that the next ORDINARY MEETING of the shareholders of this company will be HELD at the City Terminus Hotel, Cannon-street, in the City of London, on TUESDAY, the 31st day of December, 1878, at Three o'clock P.M., for the following purposes, viz.:—

To receive the report of the directors, and the audited statement of accounts of the company to April 30, 1878.
To elect two directors.
To elect an auditor, and for other business.

By order of the Board, J. JAMESON TRURAN, Secretary.
184, Gresham House, Old Broad street, London, E.C., 13th December, 1878.

THE FRONTINO AND BOLIVIA (SOUTH AMERICAN) GOLD MINING COMPANY (LIMITED).

Notice is hereby given, that the next ANNUAL MEETING of the shareholders of this company will be HELD at the City Terminus Hotel, Cannon-street, in the City of London, on TUESDAY, the 31st day of December, 1878, at One o'clock P.M., for the following purposes:—

To receive the report of the directors and the audited statement of accounts of the company for the three half-years ending the 30th June, 1878.
To elect directors.
To elect an auditor, and for other business.

By order of the Board, J. JAMESON TRURAN, Secretary.
184, Gresham House, Old Broad-street, London, E.C., 13th December, 1878.

NORTH D'ERESBY MOUNTAIN LEAD CO.
(LIMITED.)
The liability of each Shareholder is limited to the amount of his Shares.
Capital £10,000, in 2000 Shares of £5 each,
Of which 1000 are now offered for subscription.

Payable £1 per share on application, £1 10s. per share on allotment, and the balance as required by instalments not exceeding 10s. per share at intervals of not less than three months.

BANKERS.
METROPOLITAN BANK (Limited), Cornhill, London.
SECRETARY—MR. E. BEAZLEY.
OFFICES.
No. 9D, NEW BROAD STREET, LONDON, E.C.

Applications for Shares can be made either to the Bankers, Secretary, or through any Broker or Sharedealer.
Full reports by well known inspectors may also be obtained.

T. V. CLARKE AND CO.,
TRUNDLEY LANE, SURREY CANAL,
DEPTFORD, S.E.,
ARE BUYERS OF
CALAMINE and BLENDE; ZINC and LEAD ASHES, SULPHATE OF LEAD, and OTHER METAL RESIDUES.

N.B.—Sole Manufactory of the Palm Anti-Friction Grease and Lubricating Oils for Collieries, Mines, &c.; also the Asphalte Varnish Paint for coating outdoor Ironwork and Machinery.

W. M. ALLAN AND CO.,
184, BUCHANAN STREET, GLASGOW,
EXECUTE COMMISSIONS FOR THE PURCHASE AND SALE OF SCOTCH PIG-IRON WARRANTS.
Sole Agents in Scotland for—
SPEAR AND JACKSON, Etna Steel Works, Sheffield; and JOHN SHAW, Yorkshire Wire Rope Works, Sheffield.
Steel and Steel Tools, Pig and Manufactured Iron, Hemp and Wire Ropes for all purposes, Indiarubber Goods, and Furnishings of every description for Collieries, Founders, Engineers, Saw-millers, &c.

NO MORE INCRUSTATION
BY USING THE
GLOBE STEAM BOILER POWDER.

For testimonials and particulars, apply to—
J. BERGER SPENCE AND CO., LONDON E.C.

PARIS EXHIBITION, 1878.

GOLD AND SILVER MEDALS AWARDED for Steam-Engines & Boilers, also the Special Steam Pump, with Holman's Condenser & Compound Pumping Engine.

TANGYE BROTHERS AND HOLMAN,

HYDRAULIC AND GENERAL ENGINEERS,

CORNWALL HOUSE, 35 QUEEN VICTORIA STREET, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

The "SPECIAL" DIRECT-ACTING STEAM PUMP,

WITH

Holman's Patent Self-acting Exhaust Steam Condensers.

UPWARDS OF 12,000 "SPECIAL" STEAM PUMPS ARE IN USE.

After eight years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once the simplest and most certain in action. There is absolutely no extraneous gear, and the steam cylinder is *no longer than the pump*. The valves are of easy access, and are suited for pumping fluids and semi-fluids of almost any consistency.

Holman's Condenser

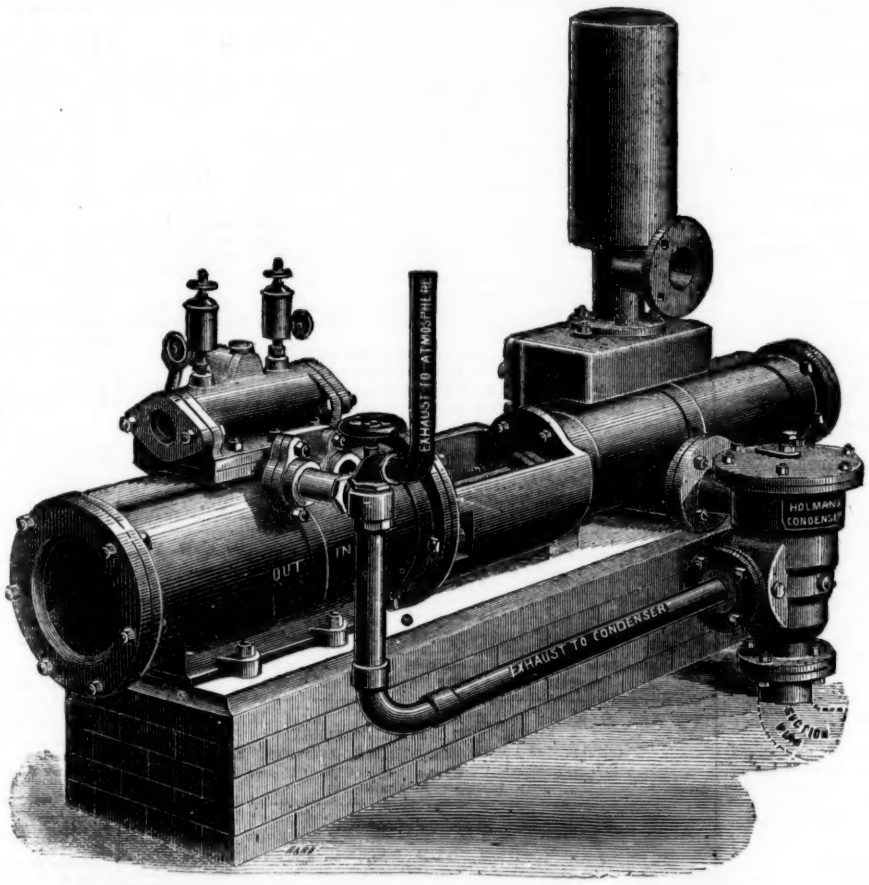
TURNS WASTE STEAM INTO GREAT POWER.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

SAVES TWENTY TO FIFTY PER CENT. OF FUEL.



WILLIAM ELLIOT, Esq., *of the Weardale Iron and Coal Company, writes under date Sept. 17th, 1875, as follows:*—"We have now THIRTY-FIVE of your SPECIAL STEAM PUMPS in operation at the various collieries under my charge—some of them employed pumping water out of our pits to the depth of 50 fms.—others employed in the pits, and a good many feeding Boilers. I have no hesitation in saying that we have found them the Cheapest and Best Pumps of the kind we have tried. I can with confidence recommend them to intending purchasers."

Messrs. BURT, BOULTON, and HAYWOOD, *Chemical Manufacturers, of London*, have FORTY of the "SPECIAL" STEAM PUMPS in use at their works.

HOLMAN'S CONDENSERS

Are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine and effecting a saving in fuel of from 20 to per cent.

In Mining operations these Condensers will be of great value.

All Boiler Feeders are recommended to be fitted with these Condensers, as not only is the exhaust steam utilised in heating the feed water, but is returned with it into the boiler.

GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	5	6
Length of Stroke .....In.	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,500	5070	7330
Price of Special Pump ...£	**16**	**18**	**20**	**25**	**22 10**	**27 10**	**32 10**	**25**	**30**	**35**	**40**	**30**	**35**	**40**	**45**	**50**	**40**	**45**	**50**	**55**	**65**	**50**	**55**	**60**	**70**	**85**	**55**	**60**
Extra, if fitted with Holman's Condenser and Blow-through Valve	£7	£7	£9	£11	£8 10	£11 10s	£12 10s	£9	£12	£15	£15	£10	£13	£15	£16	£22	£13	£16	£16	£22	£22	£16	£16	£23	£24	£35	£17	£17

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18
Diameter of Water Cylinder..In	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14
Length of Stroke .....In	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000
Price of Special Pump..£	**65**	**75**	**90**	**100**	**75**	**80**	**85**	**110**	**120**	**140**	**110**	**120**	**130**	**140**	**160**	**180**	**140**	**150**	**160**	**180**	**200**	**180**	**190**	**210**	**230**
Extra, if fitted with Holman's Condenser and Blow-through Valve	£23	£24	£35	£35	£20	£27	£27	£38	£38	£50	£28	£28	£40	£40	£55	£55	£28	£40	£40	£55	£55	£45	£45	£56	£60

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36 48 and 72-inch Strokes.

The following Testimonial gives one Example of the Power Gained by the action of Holman's Patent Condensers:—

NORLEY COLLIERY, WIGAN.

Messrs. TANGYE BROTHERS AND HOLMAN.

GENTLEMEN,—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economic sense, a most valuable feature in the drainage of underground workings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10¾ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (168 feet) per minute, the steam gauge indicating a steam pressure of 36 lbs. per square inch, 80 yards from the Pump and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21½ inches, I turned the exhaust steam from the Condenser into the atmosphere, when the speed at once fell to 44 strokes per minute. The working economy thus shown is really so great that the cost of the Condenser must be saved in a very short time.

(Signed) J. THOMPSON.

NORTH OF ENGLAND HOUSE ... ... TANGYE BROTHERS, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
SOUTH WALES HOUSE... ... ... TANGYE BROTHERS AND STEEL, Tredegar Place, NEWPORT, Mon.; and Exchange Buildings, SWANSEA

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.* — No. CI.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
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(Formerly Student at the Royal Bergakademie, Clausthal).
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SECTION V.

When the ground, although water bearing, is sufficiently strong a vertical channel is cut in the sides of the rock in the place of the vertical pipe. At the point where the horizontal outlet pipe has to be fixed an horizontal recess is cut in the rock into which the lining (which is here correspondingly broader) is recessed. This enlargement of the lining forms a sort of horizontal dam for the water above, which makes its escape through the short horizontal outlet pipe. The outlet pipe is usually made conical, and provided before its insertion with a conical stopper of oak wood, which is held back from closing the opening by means of a short iron bar screwed into the smaller end of the stopper. When the walling has been completed the oak stopper is pulled forward to close the pipe, the iron bar unscrewed, and the joint rendered still tighter by screwing a lid on to the flanges, with the insertion between the lid and the flange of a disc of leather. Should the amount of water become so great (as the walling proceeds) that the outlet pipe is incapable of carrying it off, a second outlet pipe must be inserted higher up.

Since, as we have before mentioned, bricks are not impervious to water, and that the water-tight character of the lining must depend on the cement between the joints, it is advisable to have at the least two vertical joints in and concentric with the face of the lining. Before use the bricks are well soaked in water, so that they are not likely to soak water from the damp mortar and cement, and so induce a too rapid drying of the mortar. Besides being well soaked in water before being sent down the shaft, they are again dipped into water immediately before use, in order to wash off any dust, &c., which is likely to interfere with cohesion between the mortar and brick. Should at any time an interruption of the work take place, on commencing again it is advisable to break off the last row of bricks, and after roughing the surface exposed to lay on the mortar somewhat thicker than usual. The cement and sand to form the mortar should only be mixed in such quantities as are required for immediate use.

When the walling has been completed, and all the outlet pipes stopped up, the water behind the shaft rises to its natural level. The result of this is seen in the water forcing its way in many places through to the inner side of the shaft, and issuing in fine streams from the pores of the bricks, or small openings in the joints. This phenomenon is called by German miners the sweating of the wall, and will often at the commencement give off water to the extent of 4 or 5 cubic feet per minute. After a time the sand and lime, which are carried along mechanically (the latter often dissolved), fill up the pores, the dissolved lime precipitating itself in the pores and on the exposed surface of the lining, the latter indicated by large white blotches or small lumps on the sides of the shaft; the streams of water become gradually less in number and quantity, until the percolation of the water entirely ceases.

SECTIONAL WALLING.—As has been remarked at the commencement of this chapter on the water-tight walling of shafts, the above method of commencing in water-tight strata and completing the water-tight lining in one continuous set, is not usual in this country. The water-tight lining in brick or masonry of shafts in England usually called "coffering" is executed in the manner we have previously denominated sectional walling.

The water-bearing strata of the coal measures in England are generally sufficiently strong to allow of a ledge for the wedging or bearing crib to be cut in the water-bearing strata. After the first length of ground has been excavated the wedging crib (or the bearing crib) is inserted in the usual manner. The lining is almost invariably three bricks thick, and in order to break the horizontal joints the centre set of bricks are laid one-half brick higher (respectively lower) than the inner and outer set of bricks. In many cases it is customary to make the horizontal joints run round the shaft in an helical line, so that the horizontal joints form a screw line round the inside of the lining of a pitch equal to the thickness of one brick. In order to attain this object thin boards are nailed down upon the wedging crib, increasing in number and height, so that after a complete rotation round the shaft the thickness equals that of a brick. The commencement of these packing boards for the inner set of bricks is diametrically opposite that of the boards for the inner and outer ring. In order to carry off the water during the building of the wall, both on account of its inconvenience to the workmen and the damage it might cause to the wall still in a damp state, an horizontal hole (corresponding to the outlet pipe above described) and a vertical hole crossing it are bored in the wedging (or bearing) crib previous to its insertion. Piping is fixed to the vertical hole and carried upwards as the walling is advanced. Numerous holes are bored in the pipe to allow the water admittance. The walling is backed with a lining of well puddled clay, which is so formed that the water drains off its surface towards the pipe. When the clay lining has to be carried higher the fresh clay is first placed behind the walling diametrically opposite to the pipe, and then the filling up of the rest takes place on both sides advancing towards the pipe. In order to prevent the water which escapes by the hole in the wedging crib from impeding the workmen when excavating the ground for the next set of lining, a water dam or garland crib is fixed immediately below the wedging crib. When the lining is completed the outlet hole in the wedging crib is stopped up. More recently the practice has been to fill the space between the back of the lining and the sides of the shaft with a beton formed of hydraulic lime and ashes or gravel. At the Caroline Pits, belonging to the Société John Cockerill, at Seraing, Belgium, a water-tight lining in brickwork has been put in, and in consequence of the variations in dryness and dampness, owing to the infiltration of the waters of the Meuse into alluvium through which the shafts pass, it was necessary to avoid entirely the use of wood, and hence the wedging cribs were made from dressed slabs of limestone. The winding shaft is 10 ft. 8 in. in diameter, and the air shaft 8 ft. in diameter, the first being built in three and the latter in four lengths of lining, as follows:—

	Winding shaft.		Upcast shaft.
First length...	16·00 metres	... ...	15·30 metres.
Second length	7·10 "	... ...	6·65 "
Third length	17·80 "	... ...	6·57 "
Fourth length	—	... ...	17·60 "
Total...	40·90 metres	... ...	46·12 metres.

The excavation of the first part of the ground was accomplished by aid of prop-crib timbering; at a depth of 5 yards, however, the nature of the ground necessitated the use of spilling or piling, the foot of the piles being shod with sheet-iron to enable them to penetrate better. In this manner the coal measures were reached where the first wedging crib was laid.

The wedging cribs are circular on the inside and polygonal on the outside, consisting of twelve pieces in the winding and eight pieces in the upcast shafts. The thickness or depth of the crib is 11 in., the breadth in a radial direction is 21 in. for the wedging cribs of the two upper lengths, and 24 in. for those of the lower lengths. The wedging crib is wedged only for two-thirds of the height, the remaining upper third springs 4 in. back towards the inside of the lining; this gives better access to the wedges, and is not so liable to move the crib out of its horizontal position during the wedging. The crib is wedged tight in the usual manner—two "lambourdes" are placed behind the crib, between the outer "lambourde" and the sides of the rock moss is tightly packed, and between the "lambourdes" themselves wedges are driven in; first, with the thicker end downwards, and afterwards with the thicker end uppermost. Hydraulic cement is poured between all the joints, which afterwards hardens and gives the whole a remarkable degree of solidity.

The walling is composed of wedged-shaped bricks, and built up immediately on the wedging cribs. The thickness of the walling in the lengths nearest the surface amounts to about 18 in.—*i.e.*, two bricks in thickness, and of the lower lengths to about 22½ in., or two and a half bricks in thickness. Since the material of the bricks is permeable to water the walling is made in each case to consist of two concentric rings of brickwork, separated by a space of from ½ to ¾ in. in width, which is filled with an hydraulic cement, composed of hydraulic lime and trass from the neighbourhood of Cologne. In addition, a béton composed of hydraulic cements, cinders, and sand or gravel is poured behind the lining, where the influx of water is not too great. Such a lining has always the advantage that even if water percolates through it and the brickwork it furnishes lime and fine particles of sand, which being carried off by the water deposit themselves in the pores of the bricks, making them of a water-tight nature.

After each length of walling was completed, and in excavating the ground for the next length of lining, a ledge of rock is left beneath the wedging crib, which is only partly removed when joining the upper end of one set or lining to the under side of the next wedging crib. When the brickwork of the lower lining has approached to within about 32 inches of the under side of the crib the top of the brickwork is covered by a slab of dressed limestone of the same breadth as the brickwork, and about 10 inches in depth or thickness. The space still left is filled up with two other cribs of dressed limestone, the uppermost forming the key or wedging ring. The breadth of these amounts only to about 10 inches, since the ledge of rock left beneath the wedging crib projecting so that about 11 inches towards the backside of the wedging crib rests upon the ledge of rock, and 10 inches at the front on the key ring of dressed limestone. The water, which would otherwise damage the wall and inconvenience the workmen, is carried off whilst the work is proceeding by piping laid close to the excavated sides of the rock, as we have above described. As provision for the insertion of cross bearers for guides, pumps, &c., large dressed pieces of limestone are built in during the walling. These are provided with suitable holes for receiving the ends of the bearers, which can thus at any time be readily changed without taking down any part of the walling. M. Trasenster, the engineer for the above, is inclined to think dressed stone might advantageously be substituted for bricks in the walling, as well as in the place of wood for the wedging cribs.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. VON GRODDECK, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

THE ST. GOTHARD TUNNEL.—In a paper just communicated to the French Academy, M. Colladon gives some interesting details of the progress of this great enterprise. Numerous difficulties, foreseen only in part, have retarded the work. Besides the excessive hardness of the banks of serpentine and quartz, and the insufficiency of hydraulic force on the Airolo side (after the lowness of the water in winter), there has been a very troublesome infiltration in the south portion, the volume of water having increased since the second year to more than 230 litres per second in the advance gallery. The difficulties of working here, under jets that had often the force of those from a fire-engine pump, can be readily imagined. Another difficulty arises from a mass of decomposed felspar mixed with gypsum found under the plain of Andermatt. This plastic material swells on contact with moist air, and exerts pressure of terrible force, capable of crushing the strongest wood work and even arches of granite. In some of the parts the workers thought themselves happy when they were able to advance (with manual boring) about 1 metre in three or four days; whereas through granite, with compressed air and mechanical perforation, a regular advance of 4 metres in 24 hours has been achieved; through gneiss, 6 metres and more. As regards apparatus, M. Colladon states that the volume of water from the Tremola (Airolo side) having been found insufficient, M. Favre brought water in an aqueduct 3000 metres long from the Tesin to work new turbines and four compressors on the same system as the others, but of greater volume. These turbines are of cast-iron. It is notable that the old and smaller bronze turbines (formed of one piece) which have made some 155,000,000 revolutions per annum, are in good preservation after four or even five years' prodigious service, and still work usefully, after removal of a few millimetres in the circumference, to equalise the exterior part of the cubes. On each side of the tunnel there are at present 16 air compressors in action, serving both for aeration and for boring operations. They send into the tunnel air under a pressure of eight atmospheres, sufficient to drive 18 to 20 drills, and effect good ventilation of the part already bored, which is at present 6100 metres on the north side and 5390 on the south. On either side there are, night and day, several hundreds of workmen, with lamps, and about 300 kilogs. of dynamite are consumed. The compressors are found to suffice for good ventilation, rendering unnecessary two large suction vessels, placed two years ago at either mouth of the tunnel for drawing off smoke and vitiated air. The transport of materials is effected by horses in the more advanced part of the tunnel, and by compressed air locomotives in the portions near the mouths. To feed these locomotives eight of M. Colladon's compressors are placed at Airolo and Goschenen. They draw air from the ventilating pipe, and force it under a pressure of 12 or 14 atmospheres into a pipe which passes along the part traversed by the locomotives. A great variety of rock drills have been used. Each year brings new improvements. The Compagnie du Gothard, which has charge of all the line, with exception of the tunnel, has suspended work for two years. The excess of its actual over its first estimated expenditure is put at nearly one hundred million francs. The works of the tunnel (of which M. Favre is the sole author) have not been interrupted a single day for six years, and its cost, notwithstanding unforseen difficulties, will exceed the estimates little, if at all. About eight years will suffice to complete the undertaking.

THE BRUSH ELECTRIC GENERATOR.—In the Franklin Institute experiments the Brush machine received the highest commendation of any tested. The invention of Mr. CHARLES BRUSH, of Cleveland, Ohio, United States, consists in the construction and use of annular metal armatures grooved on their peripheries or sides, or both, and insulated partly or entirely from each other. Also in constructing commutators cylindrical, with an insulating hub or body, to which are attached metallic sub-segments placed in electrical connection with the general mechanism in which the commutator is employed, and metallic wearing segments detachably attached to said sub-segments. He also claims supplying dynamo-electric machines with a wire or helix having a high resistance, and keeping same in closed circuit while the machine is running in combination with the magnet wire or helix usually employed. Mr. Brush has also designed an electric lamp or regulator—the combination with the usual carbon holder and core of a clamp surrounding the holder, and of an adjustable stop, the said clamp being independent of the core, but adapted to be raised by a convenient lifter secured thereto, whereby the holder is firmly held, and permitted to feed the carbon points as the same are consumed, and by means of the stop the said points are prevented from becoming too far separated. The various parts may be constructed of the usual materials, and of any convenient shape or size, according to the size of the apparatus required.

DEEP BORING FOR WATER.—The New River Company have been for some time past sinking a deep well at Turnford, near Cheshunt, in Hertfordshire, in search of the water of the lower greensand. The work has been carried to a depth of 900 ft. from the surface, and is now in the gault. The shaft is lined all the way down with a wrought-iron tube 26 in. in external diameter, so as to exclude the upper waters. Messrs. T. Docwra and Son, who are the contractors for carrying out the undertaking, are now going to continue the exploration by means of a diamond drill exceeding in size any previously made. The apparatus in question has just been manufactured for the Diamond Drill Company, of Victoria-street, Westminster, according to the patent design of their engineer, Mr. James K. Gulland. The drill is of steel, in the form of a ring or shallow cylinder, 23 in. in diameter, and 9 in. deep. On its edge are 48 opaque diamonds set in plugs or holders. Although firmly fixed, these admit of easy removal, so as to allow the insertion of fresh diamonds without damage in the removal of the old ones. This species of "iron crown" will be screwed on to the base of the tube forming the lower end of the boring machine, and when driven by steam power will be capable of bringing up cores 19½ in. in diameter. The requisite arrangements are made for keeping the drill cool by the circulation of water. Much interest attaches to the operations at Turnford, both in relation to the water supply and the proximity of the primary rocks.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week the arrival of the Christmas holidays, to be followed by the usual fortnightly settlement, has brought business to a stand. Owing to the continued depression all departments of trade, with unfavourable financial and commercial rumours were dull and weak until the last day or two, when the prospects of a relaxation in the tightness of the money market, along with the reassuring progress of foreign politics, have imparted a little more firmness; and looking at the low prices many good shares are now selling at, it is possible the New Year may be commenced with brisker markets.

In shares of coal and iron companies, Bolckow Vaughan (A) and Clyde Coal have each fallen 1*l.* per share, Lochore and Capledrae 5*s.*, Ebbw Vale 2*s.* 6*d.*, and Marbella 1*s.* The principal dealings have again been in Benhars, and these shares have fluctuated from 10*s.* 9*d.* to 14*s.*, and finally stand 1*s.* 3*d.* higher on the week. The secretary of the company asserts that the parties who wanted to wind it up are adopting this course to get the properties into their own hands, but whether this is the case or not, it would certainly be better for the shareholders to try and keep it going till times improve. John Brown and Co. are not to pay any interim dividend this year. A call of 1*l.* per 10*l.* share has been made by the Clyde Coal Company, payable January 2. The shares will then be fully paid up, and as there are 15,000 of them, the capital thus raised should be so many pounds. A few shares in the old established and successful Carron Company are being offered at 2300*l.* each. Andrew Knowles and Sons are 9½ dis., Bilbao 20, Bolckow Vaughan (A) 47 to 48, ditto (stock) 104, ditto (B), 28, and ditto 5 per cent. (pref.) 19¾. Cardiff and Swansea, 22*s.* 6*d.*; Chapel House, 40*s.* to 60*s.*; Chillington, 42*s.* 6*d.* to 50*s.*; Darlaston Debenture (A), 15; Ebbw Vale, 75*s.*; Great Western, 40*s.*; Llandore Siemens, 23½; Muntz's Metal, 52*s.* 6*d.* prem.; Newport Abercarn, 75*s.*; Pelsall, 10¼ dis.; Rhymney, 12; Sandwell Park, 14½; Scottish Australian, 30*s.* to 35*s.*; South Wales, 50*s.*; Tredegar (A), 10½.

In shares of foreign copper companies, Tharsis have advanced 10*s.*, while the new shares are reduced 12*s.* 6*d.* Rio Tinto 5 per cent. are reduced 2*l.*, at 58 to 59, from nominal price of 61. Tharsis have been sold at 20¼ to 21¼. English and Australian are at 20*s.* New Quebrada, 27*s.* 6*d.* to 32*s.* 6*d.* Yorke Peninsula, 2*s.* 6*d.* to 5*s.*; and ditto (pref.), 15*s.*

There is nothing doing in shares of home mines. It is rumoured on good authority, though not yet authenticated at the company's office, that they have got ore 5 ft. wide at the Deep Level Mine. Bampfylde are at 5*s.* Bodidris, 10*s.* to 15*s.* East Van, 35*s.* to 45*s.* Great Laxey, 18 to 18¾. Great Wheal Eleanor, 5*s.* 3*d.* Llanrwst, 21*s.* North Wheal Busy, 60*s.* to 80*s.* Parys Mountain 5*s.* to 7*s.*

In shares of gold and silver mines, Richmond dropped 10*s.*, to 10½; since this there has been no sale, and the first run is announced at $36,000. The future returns should be good, as it is reported the ore worked is richer, and the furnaces are new and on improved principles. The yield of the produce at St. John del Rey Mine for the first division of December is slightly better, but the stock is drooping; no doubt owing to the injustice of the tax of 4 per cent. levied by the Brazilian authorities on the gross produce, and which is really double that percentage if compared to the net profits. When the company apparently has not the prospects of increasing their 30 per cent. dividends immediately, and last year had even to reduce the previous year's balance to maintain the dividend, it is very hard to be oppressed by such a tax. The Almada and Tirito, after providing for debenture interest and depreciation, also charging all expenditure to revenue, show a loss 2721*l.* on last half year, but if they could get more capital to explore the mine in depth it is very probable they would do much better. Australian Mines wanted. Birdseye Creek are at 14*s.* 6*d.* Chicago, 20*s.* Colorado, 30*s.* Eberhardt, 70*s.* Emma, 2*s.* Exchequer, 2*s.* to 4*s.* Flagstaff, 5*s.* Frontino, 40*s.* Javali, 7*s.* Santa Barbara, 35*s.* South Aurora, 2*s.* 6*d.* to 5*s.*

In shares of oil companies, Uphalls are 1*s.* higher. Young's Paraffin, after being done at 12½, have recovered to last week's price. The others show no alteration.

Dealings in miscellaneous companies are at a stand. Native Guano, 70*s.* Prices of wagon companies are—Birmingham, 15; Bristol and South Wales, 7½; Gloucester, 7; Metropolitan, 35*s.* prem.; Midland, 6 per cent. (pref.), 8*s.* prem.; North Central, 27; Railway Carriage, 80*s.*; and Swansea, 30*s.* Prices of chemical companies shares are—Langdale's, 85*s.*; Lawe's, 8¼ to 9¼; and Newcastle, 40*s.*

SHIPBUILDING ON THE CLYDE IN 1878.—During the year now nearly ended the aggregate tonnage of vessels launched was 222,353 tons. This is an increase of no less than 52,614 tons over the preceding year, but the trade is not in so satisfactory a state as these figures would lead one to believe. On the contrary, owing to the unusual depression of the past year, there has been no new work coming in to fill the vacancies in the yards which the launches have in many cases caused. The surprising large tonnage launched is, therefore, simply due to all hands being engaged on completing orders, and as the amount of work now coming in is quite disproportionate to what has been done, it is very evident the men cannot be otherwise than reduced to great distress before long. The most business was done by Denny Brothers, who launched 18 vessels, of 22,048 tons in all. The London and Glasgow Company launched 7 vessels, of an aggregate tonnage of 12,081 tons and 2145-horse power of engines, as compared with 5 vessels and 6950 tons during 1877.

CLYDE COAL COMPANY (Limited).—An adjourned meeting of this company is to be held to-morrow (Friday), when the committee of enquiry will make a report. The books were balanced at Nov. 30 last, and, subject to audit, show that the debts, exclusive of 8000*l.* secured by heritable bond, amounted to 36,038*l.*, being an excess of 10,301*l.* over available assets. This amount is likely to be increased soon by failures of parties to meet the calls made. They recommend that 2000*l.* should be raised to sink the Wellhall Pit to the ell seam. They think the Hamilton Collieries are a valuable property, and if economically managed can be worked to a profit even in the depressed state of trade. The directors are at present negociating with the landlords with a view of getting the fixed rents reduced, and other clauses in the leases modified. The committee recommend some independent shareholders to be added to the board of directors. Another report is to be issued in a short time.

BENHAR COAL COMPANY (Limited).—The Chairman of this company has since the report of the committee of investigation referred to below was issued had both the Benhar and Niddrie fields reported on by eminent mining engineers. Their reports show both properties are much more valuable than has been represented. In regard to the Benhar field Mr. John R. Williamson states there is a sufficient quantity of Virtuewell or Benhar No. 1 coal to produce 100,000 tons for nearly seven years to come. There is besides a good deal of crop coal proved by borers, and it is probable that working coal will be found there which has not been taken into account. There is a profit of 1*s.* 11*d.* per ton of this coal sold at present at 5*s.* 8*d.* Of Ball or Shotts furnace coal there is an immense area held in lease; indeed, there is no chance of its being exhausted during the existence of the present lease. This is one of the best furnace coals in Scotland. The seam is about 2 ft. thick, with 3 in. of clay balls and band ironstone above it, the whole forming an excellent working. The ironstone averages fully 20 per cent. of the output of the seam, and even taking the low price which calcined ironstone has been lately realising the returns from this colliery show that the coal, dross, and ironstone overhead have during the last ten months fetched an average price of 5*s.* 7*d.* per ton, which leaves a profit of 1*s.* 4*d.* The Benhar property may, therefore, generally be described as one which yields a fair profit even when the coal and iron trade is pretty low, and an ample profit when it is good. The report on the Niddrie field by Messrs. Geddes is also favourable.

CWM BRWYNO LEAD MINING COMPANY (Limited).—Having frequently referred to this company being in course of formation, we have pleasure in giving fuller particulars from the prospectus just issued. The property is extensive, 325 acres, situated nine miles from Aberystwith, near Goginan, in Cardiganshire. It is thus in the midst of some of the best mines in Wales, the working of which below the bottom level of this mine it is probably within the mark to say has yielded two millions sterling. There is over a mile on the run of the lodes. The shaft is sunk down to 107½ fms., with levels driven east and west at the 68, 80, and 92 fms. Already over 70,000*l.* worth of ore has been raised, and the miners are now working on a course of ore in the 92, yielding 4 tons per fathom, and there are other lodes in various parts of the mine from which profitable returns may immediately be derived. The fact is that the mine is in full working order, and the object of the vendor is that it should be more vigorously developed by self-acting machinery both underground and at surface. Considering the amount of work done, and the prospects of the mine, it appears every penny spent on it now should make a profit, for ore can be dressed and sent to market at once. There are excellent facilities for carriage to and from the mine, and it is favourably reported on by well known experts. The lease is from 1876 for 21 years, at 1-16th royalty and no dead rent. The capital is 30,000*l.*, in 2*l.* shares, but only 3000 shares will be issued at present.

BENHAR COAL COMPANY (Limited).—The report by the committee of investigation upon the affairs of this company has been issued. Along with it are some excerpts from the engineer's reports, but the whole has rather a hurried or slipshod appearance, for which no doubt we have to blame the committee. At the same time the accountant's report is issued, which, though necessarily voluminous, affords a very clear view of the company's financial affairs. Taking the engineer's report first, it is stated regarding the Benhar Colliery that the area workable from the pits already sunk, at the present rate of output, will last two years, after which the output will gradually diminish by exhaustion. The seam of coal is of excellent quality, and commands a ready sale at high prices. It is cheaply produced, and there should be a profit from the working of 1*s.* 9*d.* per ton even in these extra dull times. In regard to the collieries at Niddrie, the area is stated at 700 acres, and the character of the field is peculiar, owing to the steep angle at which the seams lie. Evidently they form a basin with steeply sloping sides. Mining is, therefore, difficult and expensive as compared with an ordinary flat field. Apart from this, the field is exceedingly free from troubles, and the seam is of good thickness and very easily worked. The miners do not like to work in this peculiar field, so very high wages require to be paid for light work. In order to keep up an ordinary output three shifts of men in the 24 hours are employed. Such an arrange-

ment has never wrought well in Scotland, although common in some parts of England and Wales. If the common method of working only by day shift could have been adopted there would be a saving of 30 per cent. in the wages. To sum up, it appears the Benhar Colliery is comparatively free from mining risks, while the Niddrie is beset by uncertainties and risks. Coal is being worked at no fewer than eight pits. At the Kimblesworth Colliery in Durham, which is a similar depth, and has not more expensive mining appliances, there is only one pit, drawing upwards of 1100 tons per day, or double the quantity drawn at all the Benhar Company's pits. In fact, although this company's property is apparently valuable, there has obviously been such a want of forethought in the arrangement and carrying on of the works that the expenditure of large sums has been needlessly entailed, and all the time no proper general supervision.

In the committee's general remarks it is stated the secretary kept no books regularly in 1872 or 1873. At the amalgamation with the Niddrie in 1874, it appears Mr. Simpson bought over the opposition of some large holders of Benhar shares. The profits in 1875 were overstated by 7915*l.* In 1876 the profits were given at 38,345*l.*, of which no less than 21,545*l.* was overstated. In 1877 the profits were again inflated to the extent of 7674*l.* The secretary would appear to have made incorrect answers at first, even to the committee of investigation, on the point they considered it necessary to question him, and it will be surprising if either he or Mr. Simpson can satisfactorily clear up what at present looks so bad. Everything seems to be conducted in a most irregular manner. Since the formation of the company the secretary has drawn no less than 14,000*l.* for law business accounts, exclusive of his yearly salary of 1000*l.* Another party has a contract with the company, whereby he gets nearly 7½ per cent. on sales of the Cannel coal. The present position of affairs is that there is a deficiency of assets to meet liabilities amounting to 41,967*l.*, and that the share capital may be regarded as entirely lost.

The committee have, unfortunately, not come to a unanimous decision as to what is now to be done. The one-half of them recommend the company to be wound-up voluntarily, when if deemed advisable those shareholders who have faith in the concern may form an association to buy. They, however, recommend that those who have caused the present failure should be excluded, and that only such debts, assets, and engagements should be taken over as may be deemed advisable, and upon such terms as may be agreed upon. The other half of the committee, including, we believe, the wealthiest capitalists interested, wish the works to go on. As it will not be possible, owing to the deficiency disclosed, to raise more capital at present, they propose to meet the difficulties by getting the creditors to forbear. They rightly point out that a colliery earning any profit whatever under the present most exceptionally depressed state of mining industry is the exception rather than the rule, and they have satisfied themselves that the Benhar Company's business is now being carried on at a clear profit of not less than 1200*l.* per month, after providing for interest on all the debentures, and subject to provision only being made for depreciation. This rate of profit, moreover, might be materially increased by more judicious management than the company has hitherto had the benefit of. They cannot contemplate the winding-up of the concern immediately otherwise than as suicidal alike for shareholders and creditors. They believe the value of the collieries is underestimated, and, indeed, the engineer seems to acknowledge this when he states that any valuation based upon the trading results of 1877 will likely be ultimately below the real value of the property unless the present period of depression is very prolonged. They think if the works can be carried on that with an improved state of trade, or even a continuance of good management, all debts would be paid in full, and admit of the shareholders deriving some return from the capital sunk in the concern, which the gross delinquencies of the past have in the meantime rendered virtually worthless.

The meeting to decide what is to be done will be held on Dec. 27, and it is to be hoped the works will be carried on, and liquidation under any shape or form abandoned. It is clear the collieries are even now yielding a moderate profit, and a few years of good management might put the concern fairly right. No account has been taken of the oilworks, and from that source another 7000*l.* or 12,000*l.* a year might be added to profits. The contracts held with the gas companies in Edinburgh and Glasgow will, it is said, alone yield the estimated profits. We believe the most influential creditors will support a scheme to defer payment of the debts till 1880, subject to interest at 5 per cent., and that a new board of directors be appointed with an advising committee of four gentlemen to be named by ten of the largest creditors. The banks interested are of course not very willing to wait for their money till 1880, but they say they will not object if it is the wish of the majority of the other creditors. Another scheme to settle the affairs of the company is to get the creditors to take fully paid up shares for their claims, and to take from the shareholders their fully paid-up shares, and issue in exchange 51,000 shares with 1*l.* paid on each, whereby capital could be raised at any time by making further calls. All things considered, the scheme whereby the creditors delay payment for a few years is the only practicable solution of the difficulty.

The following calculations show the yield per cent. on the money invested at present prices in the shares named, based upon the last average yearly dividends being maintained:—Glasgow Caradon Copper shares would yield 3¼; Liverpool Rubber, 7⅛; Oakbank Oil, 7⅞; Runcorn Soap, 3⅞; Scottish Australian Mining, 9¼; Scottish Wagon, 6¼; Tharsis, 8¼; ditto (new), 8⅝; Uphall Oil, 4¾; and Young's Paraffin, 11⅞.

South De Eresby Mountain Mine (Limited).—A discovery made at this mine is reported as one of the greatest ever made there, which is rather an ambiguous description. The next statement in the report that the find is of immense value, for the deposits of ore get richer every foot driven is, therefore, probably not to be taken literally, but in connection with the first description, and both, perhaps, *cum grano salis*. Again, it is stated the directors have ample means in their hands for many years' work without taking into account the lead now being saved, and that any delay in placing every appliance for attaining the most expeditious development of the mine, would be inconsistent with their duty to the shareholders. Ordinary people on reading this of course would be impressed with a belief that there was plenty of capital, and the mines would be vigorously developed, but if such is the case it is difficult to understand why, in a time like the present of universal distrust, such an important announcement was not made in such a way as to leave no doubt of its meaning.

Glasgow Caradon Consolidated Copper Mining Company (Limited).—The sale by this mine on the 19th inst., computed 200 tons copper ore, realised 783*l.* 8s., or an average of 78s. 4d. per ton. This compares with 220 tons at 88s. 8d. last month, while the December sales for some years past have been:—1877 205 tons, at 71s. 11d.; in 1876 255 tons, at 91s.; in 1875 225 tons, at 110s. 10d.; in 1874, 245 tons at 112s. 7d.; and in 1873 260 tons at 94s. 7d. This is the company's twelfth and last sale for the financial year now ended, and the total proceeds of the sales during that period as published have been 9837*l.* for 2570 tons. The actual proceeds in the previous year for 2836 tons were 11,427*l.*, so 1590*l.* less has been realised this year. It will be observed that the company's policy of preserving the property till the turn in trade comes round is being followed out, as the quantity sold has been restricted; therefore, it is hoped against this decrease in the money realised from ores sold there may be an equal or greater reduction in the working cost, which will be ascertained when the annual report is issued.

Capital. Per share.	Paid up.	Dividends. Rate per cent. per annum. Previous.	Last.	Description of shares.	Last price.
£ 10	£8	£ 7†	£ 5	COAL, IRON, STEEL. ...Arniston Coal (Limited)	90s.
10	10	4	—	...Benhar Coal (Limited)	13s. 3d.
100	50	34s6d‖	25s‖	...Bolckow, Vaughan, and Co. (Lim.)...A.	47
10	10	10	10	...Cairntable Gas Coal (Limited)	¶
10	10	4s‖ April, 1876		...Chillington Iron (Limited)	50s.
10	10	—	—	...Clyde Coal (Limited)	40s.
23	20	10s‖ Dec., 1874		...Ebbw Vale Steel, Iron, and Coal (Lim.)	75s.
10	6	nil	nil	...Fife Coal (Limited)	55s.
10	10	nil	nil	...Glasgow Port Washington Iron & Coal (L)	35s.
10	10	—	—	... Ditto Prepaid	35s.
10	10	—	—	...Lochore and Capledrae (Limited)	40s.
10	10	nil	5	...Marbella Iron Ore (Limited)	29s.
10	10	nil	nil	...Monkland Iron and Coal (Limited)	16s.
10	10	5	4	... Ditto Guaranteed Preference..	40s.
100	100	nil	nil	...Nant-y-Glo & Blaina Ironworks pref. (L)	20
6	6	nil	nil	...Omoa & Cleland Iron & Coal (L. & Red.)	2s. 6d.
1	1	15	15	...Scottish Australian Mining (Lim)	35s.
1	10s.	15	15	... Ditto New	16s. 3d.
Stock	100	nil	nil	...Shotts Iron	60
				COPPER, SULPHUR, TIN.	
4	4	—	—	...Canadian Copper and Sulphur (Lim.)...	5s.
10	7	77s 6d‖	35s‖*	...Cape Copper (Limited)	29½
1	1	7½	2½	...Glasgow Caradon Copper Mining (Lim.)	15s.
1	15s.	7½	2½	... Ditto New	13s. 6d.
10	9¾	nil	nil	...Huntington Copper and Sulphur (L.)...	12s. 6d.
4	4	—	—	...Panulcillo Copper (Limited)	20s.
10	10	6†	6†	...Rio Tinto (Limited)	52s. 6d.
20	20	7	7	... Ditto, 7 per cent. Mortgage Bonds..	13⅜
100	100	5	5	... Do..5 p.ct. Mor. Deb. (Sp. Con. Bds.)	89
10	10	20	17½	...Tharsis Copper and Sulphur (Lim.).....	21
10	7	20	17½	... Ditto New	14¾
1	1	—	—	...Yorke Peninsula Mining (Limited).....	5s.
1	1	—	—	... Ditto, 15 per cent. Guaranteed Pref.	15s.
				GOLD, SILVER.	
1	1	—	—	...Australian Mines Investment (Lim.) ...	5s.
5	5	30s.‖	10s.‖	...Richmond Mining (Limited)	10½
				OIL.	
10	7	15	15	...Dalmeny Oil (Limited)	¶
1	1	25	15	...Oakbank Oil (Limited)	38s.
1	5s.	—	15	... Ditto	11s.
10	10	7½	2	...Uphall Mineral Oil (Limited) "A"	8¼. 6d.
10	10	—	—	... Ditto "B" Deferred	10
10	10	—	—	...West Calder Oil (Limited)	15s.
10	8½	17½	17½	..Young's Paraffin Light & Mineral Oil (L)	12¾
				MISCELLANEOUS.	
80	25	5	6	...London & Glasgow Engineering & Iron Shipbuilding (Limited)	22½
7	7	15	10	...Phospho Guano (Limited)	8¾
10	10	6	6	...Scottish Wagon (Limited)	9¾
10	4	6	6	... Ditto New	77s.

† Interim. ‖ Per share. * For six months of 1878.

Note.—The above lists of mines and auxiliary associations are as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. Grant Maclean, Stock and Share Broker.

Post Office Buildings, Stirling, December 26.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

York Tramways Company (Limited).—Capital 50,000*l.*, in shares of 10*l.* To make, work, and manufacture tramways in the neighbourhood of York. The subscribers (who take five shares each) are—A. Jones, Catterham Valley; J. Archbutt, 49, Buckingham Palace-road; J. L. Gane, Leeds; T. Stephenson, Forest Hill; E. Crouk, 23, Cockspur-street; R. M. Johns, Hampstead; C. H. Turner, Staines.

The Derwent-Cote Steel Company (Limited).—Capital 5000*l.*, in shares of 50*l.* The acquisition by purchase of the steel works at Derwent-Cote, lately belonging to C. Winter, with the plant, &c., and to manufacture steel and iron in all their branches. The subscribers (who take one share each) are—G. C. Barker, Newcastle; W. J. Barker, Newcastle; W. Pearson, Newcastle; W. Hartig, Newcastle, E. R. Kirkeley, Newcastle; J. Baker, Wolverhampton; J. Pearson, Notting Hill.

London and Universal Bank (Limited).—Capital 2,000,000*l.*, in shares of 10*l.* To purchase the goodwill, business, and interest of Dervien, Guillaumeron, and Company, bankers, Paris, the business to be converted into a joint-stock bank. The subscribers (who take 25 shares each) are—G. Bland, 28, Old Burlington-street; Hon. T. Preston, 6, Queensberry-place; E. Dervien, Paris; H. Place, Paris; W. B. Harrison, New Bond-street; A. J. Dunn, 7, Draper's Gardens; A. Egan, 158, Belsize-road.

Tyne Publishing Company (Limited).—Capital 30,000*l.*, in shares of 10*l.* To carry on the business of D. C. B. Adam, at Felling, Durham, as publishers, printers, bookbinders, &c. The subscribers are—W. Pattinson, Felling, 10; J. W. Pattinson, Felling, 10; L. H. Armour, Gateshead, 10; R. Cail, Newcastle, 10; G. S. Adam, Felling, 10; L. B. Marland, Felling, 25; D. C B. Adam, Newcastle, 10.

Colwyn Bay Hotel Company (Limited).—Capital 100,000*l.*, in shares of 100*l.* To establish hotels at or near Colwyn Bay, Denbigh, and to carry on the business of hotel keepers. The subscribers are—W. Brown, Chester, 15; C. Brown, Chester, 20; T. Hughes, Aldford, 20; J. Reeves, Chester, 10; F. F. Brown, Chester, 5; R. C. Drury, Chester, 10; T. Giles, Chester, 5.

Parkend Coal Company (Limited).—Capital 80,000*l.*, in shares of 80*l.* The purchasing or otherwise acquiring the Parkend and other collieries in the Forest of Dean, and working same. The subscribers (who take one share each) are—J. Y. Sully, Wembdon, coal merchant; R. O. Sully, Bridgewater, coal merchant; J. N. Dosson, Bridgewater, draper; W. Unwin, Oxford, tutor; J. Bailey, Sheffield, minister; S. J. Thomas, Parkend, colliery manager; T. H. Thomas, St. John's Wood, artist.

Thirsk District Water Company (Limited).—Capital 16,000*l.*, in shares of 5*l.* To supply water for the use of dwelling houses, mills, manufacturers, &c., in Thirsk. The subscribers (who take one share each—A. C. Bamlett, Thirsk; C. O. Sanders, Thirsk; W. Hall, Thirsk; G. Anderson, Thirsk; C. M. Swarbrick, Thirsk; J. Rhodes, Thirsk; J. H. Rhodes, Leeds; A. Rhodes, Thirsk; R. Bell, Ripon.

Krusti's Bread Company (Limited).—Capital 20,000*l.*, in shares of 10*l.* For carrying on and extending a baker's business at premises situate in Manchester and elsewhere. The subscribers (who take one share each) are—J. A. Bailey, 122, Holland-road; J. E. Richardson, Wood Green; A. R. Woolley, 42, Warwick-street; J. Tiddy, Islington; W. Newton, Gloucester-crescent; W. Buckman, Hackney; G. Missenden, Holloway.

Ramsgate Permanent Pier Company (Limited).—Capital 15,000*l.*, in shares of 1*l.* To erect a pier under the East Cliff, at St. Laurence, Ramsgate. The subscribers are—E. G. Banks, Ramsgate, 50; C. A. Head, Stockton-on-Tees, 50; T. Wightson, Stockton, 50; H. Robinson, Westminster Chambers, 50; J. J. Lilley, Lewisham, 10; H. Saunders, Bradford-on-Avon, 10; A. B. Fletcher, 34, Courtfield Gardens, 5.

Construction Company (Limited).—Capital 100,000*l.* in shares of 10*l.* To construct, maintain, and repair railways, tramways, &c., in any part of the world, and to carry on the business of constructor for public works. The subscribers (who take 100 shares each) are W. Barfoot, Leicester; W. Mousley, 1, Westminster Chambers; H. Gee, Leicester; C. Stritton, Leicester; W. T. Bourne, Worcester; W. Brett, Esher; C. E. Davison, Bishop Stortford.

FOREIGN MINING AND METALLURGY.

Large deliveries of coal are now being made in Belgium. At Liége and Charleroi, and especially in the Charleroi basin, there is very considerable animation. The daily average movement has been from 800 trucks to 850 trucks. This is a larger movement than in 1872-3, but notwithstanding this there are no complaints as to any want of trucks. This is, of course, an encouraging and favourable circumstance for industrials, who have now no heavy stocks calculated to occasion them uneasiness. It is also a source of congratulation to the working population of the Liége and Charleroi basins. It must be observed that the demand prevailing for domestic qualities of coal has occasioned, to a great extent, the activity noticeable in affairs. The iron trade and the glassworks have not enough to do to absorb very heavy quantities of coal, but even in this respect there is some improvement. There is nothing very astonishing in this, as some industrials have laid in supplies so sparingly that it is not at all unnatural that they should now run short. In the Mons district the coal traffic passing over the railways readily absorbs the current production. Some exploratory works which have been carried on at the new pit of the Reunion Colliery at Mont-sur Marchienne have just resulted in a meeting in a very regular form with the Mambourg vein, which is one of the richest in Belgium. This discovery is regarded as one of very considerable importance.

In consequence of the extremely cold weather which has prevailed the Paris coal market has shown rather more animation. There has been indeed so considerable a movement of coal over the Northern of France Railway from the North of France to Paris that the supply of trucks has again proved insufficient. Under these circumstances the Northern of France Railway Company has voted 240,000*l.* for the construction within a brief period of a considerable additional number of trucks. It appears the aggregate number of trucks of coal dispatched over the Northern of France Railway from various points between November 16 and December 3 this year was 26,928; the corresponding number dispatched in the corresponding period of 1877 was 23,485 trucks. As each truck carried on an average 10 tons of coal the additional quantity of coal carried over the Northern of France system between November 16 and December 3 this year would appear to have been 34,430 tons. This augmentation has not had the effect of causing any advance in prices; there has been, at the same time, a certain improvement in the tone of the market. In the basin of the Loire, on the other hand, the deliveries appear to have been upon rather a smaller scale this year than in 1877.

There has not been much doing in the iron trade of the Haute-Marne group, but in some respects there is considered to be a tendency towards a revival in affairs. A fall of 8s. per ton has, however, been noted in plates; iron wire has also been rather weaker. In the Meurthe-et-Moselle pig has remained at very low rates; refining has made 2*l.* 4s. to 2*l.* 5s. per ton at Nancy, and 2*l.* 2s. 6d. to 2*l.* 3s. 4d. per ton at Longwy. In the Loire-et-Rhône transactions in iron and plates are comparatively limited and restricted. The Northern of France Railway Company has just ordered 3300 tyres from the Creusôt Works; the Western of France Railway Company has also ordered 1100 axles. A rolling-mill is at present being established at Creil, in the department of the Orse. The new mill will, by way of a speciality, work a patent for the conversion of Bessemer rails into wire, nails, and rivets. The Westphalian Railway Company will let on the 3rd prox. a contract for the supply of 22,500 fish-plates, 46,000 bolts, and a quantity of other accessories.

It is stated that the Belgian Minister of Public Works, after having taken the opinion of competent advisers, has resolved to pursue upon a large scale the renewal of permanent way upon the Belgian State lines, in accordance with various metallic systems. Hitherto metallic permanent way has only been tried experimentally in Belgium, but the definite renewal of 25 or 30 miles will be shortly commenced upon the new principle. Negociations are stated to be pending between the Administration of the State lines and the proprietors of certain rolling-mills with reference to a delivery of iron rails. The rates at which iron rails have been offered appear to have been about 5*l.* per ton, but the difference between the price of iron and steel rails is not now sufficient to give the former much chance of an extended use. The shareholders of the Union Forges and Rolling-Mills Company have decided to raise 12,000*l.* of new capital, and to write off a corresponding amount of old capital. We learn that the St. Leonard Company, which recently felt itself obliged to pay off a large number of its workpeople, has just re-engaged a part of them, in consequence of the receipt of new orders for work. The manufacturers of arms have also received some orders, which will enable them to afford employment to their workpeople. There is said to be an important demand at present for agricultural machines, and especially for reaping machines.

Meetings of Public Companies.

NEW ZEALAND KAPANGA GOLD MINES.

The annual meeting of shareholders was held at the offices of the company, Austinfrias, yesterday,

Mr. Tufnell Southgate in the chair.

Mr. W. J. Lavington (the Secretary) read the notice convening the meeting, and the following report of the directors:—

Your directors beg herewith to submit their sixth annual report, with balance-sheet, made up to Oct. 19, in New Zealand. Since last meeting a further issue of preference shares has been sanctioned by the shareholders, which have been taken up to the extent of 2476 shares of 20s. each. This enabled the directors to resume operations in August last, after paying off the debt then standing upon the property, 154*l.* 13s. 11d., and the balance-sheet deals with the first two months' work after the resumption. In that time the return of gold was 173 ozs., a quantity about sufficient to half pay the cost of working, and the directors have had advices from time to time that the operations from Oct. 19 to Dec. 8 had resulted in a further return of 163 ozs. This result cannot but be considered as satisfactory, and taking into account the remarkably large yield obtained from the quartz, only comfirms their previously expressed opinion as to the valuable property possessed by the company, and the probable profitable result when the same is better developed. It needs, however, some further outlay before this point can be reached, and as the preference shares were not adequately taken up, your directors are now considering the best method of dealing with the question of finances, and in the course of a few weeks will be prepared to submit a plan for your consideration. The directors retiring by rotation are Messrs. H. Wilson and Col. C. Fludyer, who offer themselves for re election. The shareholders will also have to appoint an auditor for the coming year.

The Chairman said, since the report of the directors was prepared advices had been received from the company's agent in New Zealand. The letter only arrived on Tuesday, or it would have been embodied in the directors' report. As, however, this advice gave the latest information on the mine (being dated Nov. 11), he would ask the secretary to read it.

Mr. Lavington then read the following report from Capt. Thomas.

Nov. 11.—Coromandel Shoot: Since my last report the 67 fathom level has been driven on the course of the lode from No. 2 winze south 5 fathoms—distance driven 7 fathoms—and north 3 fathoms—distance driven, 5 fathoms. The lode in the north end is 4 to 5 feet wide, producing at times rich specimens and good general crushing stuff. The lode in the south end is 2 ft. wide, and is at present poor.—South Stope: This face above the 60 has been further stoped 2 fms. long and 4 fms. in height; the lode averages 2 ft. wide, sometimes yielding good specimens and average crushing stuff.—Albion Shoot: The 50 end north has been further driven on the course of the lode 6 fms. 4 ft.; total distance driven north of sump winze, 67 fms. 2 ft.; the lode averages 1 ft. wide, and is still poor, no gold being seen for the month; the ground is good for driving, and is very likely at any moment to produce payable stone. In driving a nice looking leader of quartz, bearing easterly, was cut. I have put the men on to open on it for a few stems to see how it will turn out.—Caunter Leader: This prospecting end has been driven on the course of the leader 4 fms.; distance driven, 12 fms. The leader keeps about 1 ft. wide, of nice-looking quartz; no gold has yet been seen, and the crushing stuff is consequently poor. The indications are so good that I am hoping every day to come across some gold-bearing stone.—Crushing: From the 67 we have crushed 9 tons of quartz, yielding 10 ozs., with 40 lbs. specimens, yielding 43 ozs. gold. From the south stope 6 tons of quartz gave 8 ozs., with 25 lbs. specimens, yielding 15 ozs. gold. From the 50 north end and caunter leader 10 tons were crushed, yielding 2 ozs. Total quartz crushed, 25 tons—specimens, 25 lbs.—producing 78 ozs. melted gold. All points of operations, both underground and at surface, are pushed ahead with every dispatch possible. The machinery and pitwork remain in good order.—James Thomas.

Mr. Peter Watson asked what was the date of the previous advices from the mine?——Mr. Lavington replied that the previous report was dated Oct. 14.

The Chairman said the shareholders would have seen, from the agent's letter of Nov. 11, that the yield of gold was still continuous, and although the directors were equally with Capt. Thomas disappointed that good had not been reached to any extent at the Albion shoot, it was some satisfaction to know that at the Coromandel shoot they were still producing as much gold as it had done for some months past. In September the yield was 85 ozs. of gold, in October 88 ozs., in November 78 ozs., and Dec. 8 they were informed by wire that the yield was 85 ozs., from which it would be seen that the gold had in no way fallen off at the Coromandel shoot. If, as had been anticipated, gold had been met with in the Albion shoot they would at the present time not only be paying costs, but there would be a small profit. With respect to finances, since the last annual meeting new capital had been raised to the extent of 5456*l.*, out of this 4800*l.* had been remitted to Cap. Thomas, 196*l.* 10s. had been paid for telegrams and bankers' commission, 326*l.* for arrears of secretary's salary and office expenses, and 113*l.* in paying off some small debts, leaving a small balance of between 40*l.* and 50*l.* in hand. Taking all things into consideration he thought there was reason for some satisfaction. In the letter which had been read from Capt. Thomas, he conveyed an intimation that in the driving he had met with some native arsenic, which he had sent to the geological professor to have it analysed. He (the Chairman) was not chemist enough to tell the shareholders that the presence of arsenic was a forerunner of gold; but the agent wrote as if the discovery were important to the future of the company. He would no doubt inform them when he received the analysis from Dr. Hector, to whom specimens had been submitted. Of course it was impossible for any man to say exactly when gold would be found, and no doubt Capt. Thomas was very much disappointed that gold had not yet been met with in the Albion shoot. He (the Chairman) was not aware that there was any other point to which it was necessary to call attention, and, therefore, he would move the adoption of the report and accounts.

Mr. H. Wilson seconded the motion, and said that after the remarks of the Chairman it required but few observations from him, but as he had had the honour of presiding at the meetings of the company upon more than one occasion in the unavoidable absence of the Chairman, when he had expressed the confidence he felt in the property, it would not be out of place if he stated that so far from his appreciation of the property having in any way been diminished he believed there was a very good future for the property if it could be developed as it should be. He had no reason to alter the favourable opinion he originally formed with regard to the property. Their manager had had to contend with many difficulties, which could not have been anticipated, but with the energy he had displayed and the results attendant thereon the directors were certainly not disappointed.

The report and accounts were then adopted unanimously.

The Chairman proposed the re-election of the retiring directors—Mr. H. Wilson and Col. Fludyer. The directors had worked for the company for six years without any remuneration whatever, and he thought they were entitled to the confidence of the shareholders.——Mr. Crowley seconded the proposition.

Mr. Gibbs thought the report and balance sheet should be forwarded to the shareholders before the meetings, so that the shareholders might have an opportunity of studying them. He believed this was promised at one of the meetings. He also complained that the meeting was held upon such an inconvenient day as had been chosen for it.

The Chairman replied that they were bound to call the meeting not later than that day. They had delayed calling it in hopes that better advices would be received from Capt. Thomas, but if it had been put off any longer anybody could have summoned the company for not holding the meeting within the period fixed by the statute. With respect to the question of sending out the balance sheet prior to the meetings, he had never promised that this should be done.

Mr. Wylde said he belonged to a great many companies, and in all of them it was usual to distribute printed copies of the reports and accounts before the meeting, and he hoped in future it would be done in this company.

Mr. Peter Watson said it was always a matter of difficulty to get a meeting at this time of the year, and he had come from a long distance on purpose to be present at that meeting. He thought the information the Chairman had given them was of a satisfactory character. With regard to the driving of the 67, which had between Oct. 14 and Nov. 11 been driven 6 fms. north and 3 fms. to the south, it was stated that the lode was producing good average stuff. He would ask what was about the average yield of the ore raised?

Mr. Lavington, in reply, said the average had been close upon 2 ozs. to the ton. Last month it had been nearly 3 ozs.

Mr. Watson said he asked the question for this reason—he had received a statement from the Frontino and Bolivia Company (in which he had for some time a considerable interest), on which he found that in the half-year ending with June last they had made a profit of 4659*l.*, as against a loss of 1165*l.* in the previous half-year, and a profit of 333*l.* to Dec. 31 last, as compared with previous losses. The Frontino and Bolivia Company had produced nearly 7000 tons of ore, which had yielded 8200 ozs. of gold, giving an average of about 1 oz. to the ton, whereas this company was producing double and nearly treble that percentage. He thought the directors of this company ought to open the ground as quickly as possible. It might be that the company had been somewhat starved, like so many other companies in these depressed times, but it was in periods of depression that shareholders should rally round their directors and come forward and endeavour to find funds to develope the property—which was already producing gold—more vigorously. He would strongly urge that a boring-machine should be procured,

which, instead of driving 4 or 5 fms. a month, would drive double or treble that quantity of ground. The quality of their ore was good—of more than double the average yield of Frontino and Bolivia, which was paying dividends, and which at the present time at a market value of 110,000*l.* or 120,600*l.* By greater vigour in the working of the property it would soon be brought into a profitable and dividend-paying state. They could get a boring-machine for 700*l.* or 800*l.*, including the carriage and fitting up, which would do three or four times the dressing which was now being done, which would make the property very much more valuable than it was at present. Then they were informed that the property was producing "native arsenic," which was mundic; and there was an old saying in Cornwall that "mundic rides a good horse." In the Devon Consols Mine, in which he was the largest shareholder and a director, they produced more mundi than any other mine in the country, and in the last 30 or 40 years they had sold between 3,000,000*l.* and 4,000,000*l.* worth of mineral. He believed that if the shareholders of this company rallied round the directors, and instructed them to procure a boring machine, they would soon see a very different state of affairs at the mine. (Hear, hear.)

The retiring directors were then re-elected,

On the motion of Mr. MCGEORGE, seconded by Mr. P. WATSON, the retiring auditors (Messrs. Goode, Daniel, and Co.) were re-appointed for the ensuing year.

Mr. GIBBS said he would very much like to see Mr. Peter Watson on the board, as he was a gentleman who thoroughly understood mining.

The CHAIRMAN said nothing would give him greater pleasure than to see Mr. Watson on the board, and, if necessary, he would willingly give up his seat to that gentleman.

Mr. GIBBS did not wish that Mr. Southgate should leave the board by any means, but he knew that a better mining man than Mr. Watson was not to be found, and he would propose that Mr. Watson should be invited to become a director of this company.

The CHAIRMAN seconded the proposition, which was carried.

Mr. P. WATSON said he had a great deal to do with various companies, and he would not promise to accept the seat which had been offered to him, but he would consider the matter.

Mr. GIBBS asked what the item of interest and discount consisted of?

The CHAIRMAN replied that that was the interest on the debentures which had not been paid.

Mr. GIBBS understood that the gentlemen who had taken these debentures had been good enough to take shares in exchange for their debentures?

The CHAIRMAN, in reply, said Mr. Gibbs had not been quite correctly informed. The debenture-holders had been asked to take shares in exchange for their debentures, and some of them had consented.

Mr. WRIGHT bore testimony to the courtesy which he had upon all occasions received from every member of the board and from the secretary, and was happy to say that there had been an openness about the proceedings of the company which was highly creditable to all concerned. He thought they should, however, adopt a more vigorous policy of development, and he hoped Mr. Watson would consent to join the board, for in him they would have a practical mining authority on the board. (Hear, hear.) He trusted the shareholders would support the directors in this matter.

Mr. P. WATSON said if he joined the board he would do so fearlessly, and independent of directors and shareholders, and would go his own way entirely. He had been brought up in connection with some of the largest mines in the country, and, therefore, he knew something about mining; but he would not go in for remuneration until the shareholders received some return. (Hear, hear.) If he accepted the seat he would he hoped work harmoniously with the present board, but if he did not join the direction he would place his services in the hands of the directors, and would consult with them on any matters beneficial to the shareholders at large.

The proceedings then terminated with a vote of thanks to the Chairman and directors.

[For remainder of Meetings, see to-day's Supplement.]

NEW ROTARY PUDDLING FURNACE.

The great ironworks at Creusot, in France, are so widely known as being conducted by eminently practical men, that an invention by Mr. HENRI SCHNEIDER cannot fail to attract attention. The apparatus which he has patented is composed of four principal parts—the fire-place, the rotary puddling chamber, the smoke-box, and the arrangement for driving or actuating the moving parts. The fire-place is enclosed within a cylindrical casing of sheet-iron, and, therefore, is not likely to be put out of shape. The exit of the flame takes place through a cylindrical opening in the side, and in which is placed a fire bridge formed of a water chamber constructed of metal, and protected on one side by a mass of oxide of iron and on the other by fire-brick. A lateral opening is made in this exit passage for the purpose of obtaining access to and repairing the fire-bridge and adjoining parts without stopping the puddling operation. The exit aperture of the fire-place on the side of the puddling chamber is provided with a hollow ring containing water for the purpose of protecting the arch above the fire-bridge and the foundation plate is kept cool by means of a stream of water. To this plate is attached a hollow brass ring, through which water circulates. It is provided with a steel ring, which may be easily renewed when it becomes worn by the friction of the end of the rotary puddling chamber. The face of the arch over the fire-bridge is inclined towards the puddling chamber, and a diagonal hole is made in it in order to admit a current of air to increase the oxidising action of the flame. Another hole or air passage for a like purpose is made at the rear part of the fire-place.

Above the arched roof of the fire-place is a metal envelope, thus forming above the roof a space with which the air holes above-mentioned communicate. This space receives air from a pipe provided with a suitable valve. The ashpit is provided with doors, which may be opened when it is required to clean out the ashpit, but at other times constitutes a close chamber. The door or opening whereby the fire-place is supplied with fuel is of a peculiar construction. There is a hopper for holding a supply of fuel, which passes down an inclined passage on to the grate or fire bars, but the hopper and passages are closed externally by a valve or door, leaving a space above the fuel; this space communicates with the ashpit or with one of the chambers which is supplied with air under pressure, so that instead of the smoke, flame, and gaseous products of combustion having a tendency to pass through the mass of fuel and escape out of the fire-place, they are driven back by the pressure of the air, and carried forward into the puddling chamber. A similar arrangement is adapted to the stoking hole and other openings into the fire-place, so that only air can escape therefrom into the atmosphere by leakage. It will be understood that water is supplied to the hollow metal rings and spaces which it is required to keep cool, so that the water is kept constantly flowing through in order to carry off any excessive heat.

The rotating puddling chamber is surrounded with or enclosed within a metal casing, between which and the inner chamber is a space in which water is allowed to flow through an annular metallic fitting, in which are made a series of openings all round the ring, which is fixed and is fitted to a groove made in the metal envelope. This annular metallic fitting being fixed is stationary, while the puddling chamber and its envelope are made to slowly rotate on its axis. Water under pressure is supplied to the annular fitting at its lowest part, and passes from thence through the openings or holes made therein into the space between the metal envelope and the inner chamber, and after circulating in this casing, and thus keeping the metal envelope cool, passes again into the annular metallic fitting, and from thence out at the top thereof, and is conducted away from the apparatus. The ends of the rotary puddling chamber are made conical, and are provided with metallic fittings, which are made to bear against the fixed parts of the apparatus in such a manner as to form water-tight joints. The rotary puddling chamber is supported on two parts of friction wheels, and rotary motion is imparted to the chamber by means of a toothed pinion which gears into a toothed ring fixed on the outer casing or envelope. The shaft on which the pinion is mounted is actuated by toothed gearing driven by a small engine, which forms part of the apparatus. As this class of puddling furnace is capable of operating upon large masses of molten metal at a time it becomes necessary to provide some means of subdividing the mass so that puddled balls of convenient size and of about the same weight should be produced. This is effected by dividing the chamber into two or more compartments by means of transverse partitions or bridges which project up into the interior of the chamber at certain parts. These partitions are made of copper or sheet-iron, and are hollow for the purpose of receiving water, whereby they are kept cool in the same way as the other parts of the chamber. They are suitably protected from the action of the heat or of the molten metal by being covered with fire-clay and oxide of iron or other suitable substance, as is well understood.

The smoke-box is made movable for the purpose of allowing the puddled balls to be removed from the rotary puddling chamber. To this end the smoke-box is mounted on a strong shaft, which is capable of turning in bearings, and also carries a toothed wheel, which gears into a vertical rack secured to the upper end of the flanged rod of a hydraulic pump. Upon setting this pump to work the vertical rack will act on the pinion on the axle of the smoke-box, and will thus lift the latter away from the end opening of the rotary puddling chamber. This smoke-box, like the other parts of the apparatus, is enclosed in a metal envelope in such a manner as to leave a space between the parts to receive water, which is made to circulate therein for the purpose of keeping the parts cool. At the end of the smoke-box is a peep hole, through which the attendant can watch from time to time the progress of the puddling process in the rotary chamber. A hollow metal ring and other devices, such as those used at the fire-box end of the chamber, are employed to make the parts fit at the smoke-box end, and these parts are kept cool by the constant flow of water through them. The puddling chamber is actuated by means of a two-cylinder steam-engine which has no dead points, and motion is transmitted therefrom by a system of toothed gearing acting on a large toothed ring fixed outside the cylinder, as already mentioned. It is found convenient to have two sets of toothed gearing, but they may be connected by means of a clutch arrangement when required, as will sometimes be the case. The journals of the axles of the wheels which support the rotary cylindrical chamber are made with a series of projecting rings, which take into corresponding grooves made in the plummer blocks, so that these wheels are effectually prevented from being moved laterally out of their place.

REFINING LEAD BY ELECTROLYSIS.

By subjecting impure lead or the ordinary lead of commerce to the process of electrolysis—that is to say to the action of solvents excited by electricity—Mr. N. S. KEITH, of Brooklyn, New York, proposes to leave the impurities undissolved, whilst the lead is separated and deposited by itself in a purified form. His invention embraces the exposure of the lead to be dissolved to the action of an electric current under the conditions of an anode in a suitable electrolysing solution or bath. Also the use of such bath or solution for refining impure lead aided by the action of heat applied to the solution. He further claims the combination of two or more baths with the same battery, and the use of an acidulated solution of salt of lead, and the double operation of separating the impurities from the lead, rendering them easy of refinement, and at the same time obtaining metallic lead in a pure state. In practice he uses a competent generator of electricity in connection with a suitable bath, composed of an electrolysing solution, into which he introduces the lead to be treated, as the positive pole of the battery, and any metallic or other electric conductor as the cathode or negative pole.

For the bath he uses solutions of some of the salts of lead. But in the action of normal solutions of the neutral salts of lead, sub salts and oxides form upon the electrodes and in the solutions, thus decomposing the solutions and stopping the electrolytic action by reason of the non-conducting coating on the electrodes and the changed character of the solutions, in consequence of which the electolytic action gradually grows less, and often ceases altogether; and at best it is imperfectly carried on in normal solutions. To overcome these difficulties he uses solutions of acetate of lead, or of chloride of lead, or of nitrate of lead, each made acid either by acetic or hydrochloric acid; having ascertained by practical experience that this acidulation prevents the said formation of sub-salts and oxides upon the electrodes, whereby the electrolytic action remains unimpaired an indefinite length of time. It is necessary to use solutions of salts of lead, which, under the exciting influence of electricity, as applied in the electrolytic bath, do not dissolve gold, silver, and other constituents of commercial impure lead, pig-lead, or of lead known in the market by the name of "base bullion," but will dissolve such lead. He, therefore, employs the aforesaid solution or solutions of acetate, or chloride, or nitrate of lead, made acid, as described, having found that these readily dissolve the lead when electrolytically treated, but do not dissolve gold, silver, and other metals. He uses various solutions, notably those of oxide of lead in solutions of caustic potash and caustic soda, but he prefers a solution of acetate of lead in water made acid by acetic acid. He also prefers nearly saturated solutions, though almost any strength of solution may be used.

Having prepared the bath by placing the solution in a proper vessel, he attaches some of the above mentioned impure lead, preferably previously cast or rolled into sheets, to the positive pole of a generator of electricity, and immerses it in the bath, thus making it an anode. To the negative pole he attaches a sheet or sheets of copper, brass, lead, or other metal or carbon, immersed in the bath, thus making it or them the cathode. He procures the necessary current of electricity from any source, but preferably from magneto-electric or dynamo-electric machines, in well known ways. As long as a current of electricity flows in this circuit lead is dissolved from the anode, and deposited in a pure crystalline metallic form on the cathode, from which it may be removed for melting into commercial shape, or otherwise utilised. Such gold, silver, antimony, copper, tin, and the like as may be in the anode, remain undissolved, and gradually drop off the surface of the anode in the shape of a fine powder into properly placed receptacles, whence the powder may be removed for subsequent refining or melting, or sale; or the anode may be placed in a bag of muslin or like material, which will retain the undissolved impurities so that they may readily be removed.

The size and number of the electrolising baths are varied, to accord with the necessary extent of the operation, and where a series of two or more baths for electrolising lead are used he arranges them so that the cathode of the first bath of the series is electrically connected with the anode of a second bath, and the cathode of the second bath is electrically connected with the anode of a third bath, and so on through any number. This is a valuable method, for though the resistance thus added to the electric current decreases the current passing, and the amount of lead dissolved and deposited in any one of the series, yet the aggregate amount of lead dissolved and deposited is increased, with a corresponding decrease in the aggregate consumption of zinc and acid in the galvanic battery connected therewith, or if an electrical machine be used, a corresponding decrease in the power used to drive it. In this manner he effects a great saving in the cost of the electricity needed for electrolising a large amount of lead. He has also found that by heating the solutions he uses for electrolising lead their conductivity is much increased, so that electric batteries or machines of much less electromotive force may be used, thus increasing the economy of this process. As he prevents the formation of sub-salts and oxides on the electrodes and in the solutions, he obtains the full electrical equivalent of lead dissolved and deposited for the electricity used, and the solutions are not decomposed.

IMPROVEMENTS IN STEAM PUMPS.

Some important improvements in connection with steam pumping-engines have been invented by Messrs. JOSEPH EVANS and SONS, of Calwell, Foundry, Wolverhampton. The piston is constructed in two parts forming the ends thereof (either formed in one piece or fixed together), the said ends being distanced apart from each other at somewhat more than the length of the stroke. The hollow place thus formed between the two ends of the piston and within the cylinder is the steam chest, and contains a slide valve working over ports in the inner face of the cylinder. The said slide valve has three bars and two exhaust openings in its face, and works over two ordinary steam ports, passing one to each end of the cylinder, one central exhaust port, and two recessed ports in the inner face of the cylinder. The recessed ports allow the steam to flow from the steam chest alternately under each end bar of the valve and into the corresponding steam port to the end of the cylinder. The said valve is actuated by being moved alternately by the inner ends of the hollow piston. The said valve is provided with two pistons working in cylindrical parts, one at each end of the valve. The pistons are upon the same rod or axis (and parallel with the axis of the cylinder), so that as one piston is pushed inwards the other moves outwards.

Motion is given to the valve through the medium of the pistons alternately and the steam within the cylindrical parts acts as a cushion to the blow given by the main piston. The pistons are recessed in front to still further lessen the shock. Any suitable modification of cataract or other arrangement may be used as a cushion to the blow caused by the main piston. The pump cylinder and valve are constructed similarly as the steam piston and valve, but that the valve is similar to an ordinary three-port slide, as it works over one centre (suction) port and two end ports passing, one to each end of the pump cylinder. The fluid under pressure is forced into the hollow between the ends of the piston, and passes from thence to the air vessel or into the delivery pipes. One or more rings may be formed solid to the pump valve and be split, so as to spring out to fit the cylinder, and thus tend to keep the valve in equilibrium. These rings may be used also for the steam valve when desired, and this arrangement of rings is applicable also to other slide valves arranged to work within cylindrical chests. The arrangement of steam piston and valve is applicable also for other motive-power engines requiring a reciprocating motion. The arrangement of pump piston and valve is applicable also for hand and other pumps, and the pump may be actuated if desired, by means of a lever, cam, or crank between the ends of the piston. The arrangement of steam piston and valve is applicable also to engines for working pumps having clack or other valves.

The improvements consist further in applying expanding rings to the collars of piston valves for engines and pumps, and other purposes, so as to take up the wear, the open part of the said rings being closed by a V'd tongue piece pressed out by the pressure of the fluid acting within a recess in which the shank of the tongue piece is carried, or by a spring or other suitable means. The nose of the tongue piece runs in a groove in the cylinder in which the valve works, and thus keeps the valve from turning round and the tongue from passing over any of the openings forming the port. In the case of a horizontal piston valve a faced part runs the whole distance of the valve between the collars on the bottom side, so as to give more wearing surface to carry the weight of the value.

ELECTRICITY AS A MOTIVE POWER.—In the course of a lecture on electricity delivered by Mr. Gerard Finch, M.A., in connection with the Wigan Mining and Mechanical School last week, a novel illustration was given of electricity performing mechanical work. A saw-bench was placed on a platform connected with a Siemens's dynamo-electric machine, which in its turn was connected by wires with the machine outside the hall used for producing the electric light during the lecture. On the electricity being communicated the saw was set in motion, and timber up to 5 in. in thickness was cut into strips. Lord Lindsay, M.P., F.R.S., and President of the Royal Astronomical Society, was in the chair, and among the audience were a large number of the leading colliery proprietors of the district. The latter, our Wigan correspondent states, are inclined to test the practicability of working coal-cutting machines and other underground machinery by electricity. At present compressed air is the only power that can be used for driving these machines without interfering with the ventilation of the workings. Electricity is said to produce equal effect at considerably less cost. It can also be conducted cheaply and easily to any part of the mine by means of wires.

*** The following report was sent too late for insertion in its proper place:—

DERWENT.—John Morpeth, Dec. 23: Herewith you have the list of bargains let here on Saturday last, with estimates of ore, &c.—Jeffries' Shaft, Middle Vein: The 95, 84 fms. east of shaft, continues by side of vein, and is without change. The vein in this level, where we are stripping it down some 8 fms. back from end, is 6 ft. wide, and yields 15 cwts. of ore per fathom. No. 1 stope in the back is of like width and produce. No. 2 stope is 7 ft. wide, and yields 15 cwts. of ore per fathom. No. 3 is 6 ft. wide, and yields 13 cwts. No. 4 is 5 ft. wide, and worth 15 cwts. No. 5 is 4 ft. wide, and worth 16 cwts. The flats over the same level, on south side of vein, produces 18 cwts. of ore per fathom. The 93, 158 fms. west of shaft, is 2 ft. wide, composed chiefly of limestone, white iron, quartz, spar, and spots of lead ore. Over this level we have now five stopes. No. 1 is 5 ft. wide, somewhat disordered, and poorer because thereof; its present value is 13 cwts. Nos. 2, 3, and 4 are each 4 ft. wide, and each worth 15 cwts. of ore per fathom, and No. 5 is 4 ft. wide, and worth 11 cwts.—Sun Vein: This vein in the stope over the 70, 19 fms. west of shaft, is 4 ft. wide, and yields only 7 cwts. ore per fathom. The 70 east, 31 fms. from shaft, is 2 ft. wide, and just now a little poorer, yielding 9 cwts. ore per fathom. The stope following this end is 2 ft. wide, and produces 13 cwts. ore per fathom.—Westgarth's Shaft, Middle Vein: The 93, 106 fms. east of shaft, was driven last month 4 fms. 1 ft., and is now within about 3 fms. of the 93 west from Jeffries'. We have about 2 ft. of vein on the south side of level (the other part being left standing), and for this width the vein yields 10 cwts. ore per fathom. The 74, 195 fms. west of shaft, is poor; the vein is 1 ft. wide in the division of the high and low coal sills. The stope in the back is 2 ft. wide, and worth 14 cwts. We had a breakage of the iron rod of the top lift of pumps in Jeffries' shaft on Saturday morning, causing a stoppage of the engine for several hours. The mine is in fork again, and all underground work in full operation, but at surface the various branches are greatly impeded by the long-continued frost and snow storm.

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WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,
MINEOWNERS, STOCK AND SHARE DEALERS, &c.
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Ten years ago the weekly information which had previously been published for a great number of years in WATSON BROTHERS' Mining Circular was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the Journal on the Clementina Mine.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to *recommend* mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fornightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

1878.—So far from writing a review of the past year we think the best way is to let it alone altogether. There is very little good to be said of it, and it is useless crying over spilt milk. We remember well the panic of 1847, and how history has generally repeated itself every ten years; and, therefore, we have no fear but that the present state of affairs will pass away, and will be succeeded by renewed confidence, increased trade, and general speculation. In times of panic the public are like a flock of sheep—frighten one through a fence and the rest will follow rashly and heedlessly. The holders of stock and shares in a panic think the world is coming to an end, and rush into the market to sell. Confusion is created until prices fall, and all become sellers and no buyers, excepting the bargain hunters, who have always taken, and will take, advantage of these panics to pick up cheap things, and make enormous profits afterwards. There was a time when mines were considered the most speculative of all things, but late years have shown that greater losses may be made in what were considered good and safe investments—such as banks, &c. As we have often repeated in these pages, mining is known to us all as a speculation, and, therefore, entered upon cautiously, and with money which can be spared. In banks people invested their all, never dreaming of the word "speculation," or that banking meant gambling and speculating with their and other people's money. In mines we have always recommended a division of risks on a small scale, so that a speculation cannot result in any great loss, and may result in a great profit. Metals are the backbone of trade and commerce, and necessary to both, but they cannot be had without mines are worked, and mines cannot be worked without risk and some sort of speculation; and, therefore, individuals alone seldom or never have the courage to work them, and they are divided into shares. Of course, we write of *bona fide* and legitimate mines, and not of the spurious articles which too frequently abound.

For 21 years in succession, up to about 20 years ago, we occupied a large space at this season of the year in the columns of the *Mining Journal* for our "Annual Reviews of the Progress of Mining in England, Wales, Scotland, and Ireland." We gave the returns, the profits, the prospects, and general particulars of some hundreds of mines every year, so that our readers could judge of them for themselves, and out of the lot we generally selected half a dozen or so to recommend at the commencement of each year. But the labour and anxiety of getting up such a work, and the enormous correspondence with officials which it entailed, became too much for us, and we reluctantly gave it up. We endeavour, however, in this place to keep before our readers the particulars of a few mines we think worthy of support, and to give the best advice we can when called upon to do so, and that our efforts are appreciated is apparent from the extensive way in which this column is read, and the number of letters we get every week asking for our opinion and advice, and oftentimes with a request that it should be given here instead of privately, though the latter plan in many cases and for various reasons has to be adopted. We can only say, then, that in the coming year our services will still be, if we are spared, at the command of our friends, and that we shall continue to call attention to what we consider wrong in speculative things, as well as to such mines as we think we can safely recommend, looking at dividend mines in regard to the interest they pay, with their probability of continuance, and to progressive mines for points to come off such as may fairly be considered likely to result in success.

Once more then the old motto, though many have passed away since we adopted it in the Journal some 40 years ago—"A happy new year and prosperous to *one and all*."

A SHAREHOLDER, RICHMOND.—In the flourishing days of the Emma Mine we lost several clients by giving good and honest advice. That mine had for directors M.P.'s and men of the highest commercial standing, and paid enormous dividends; but for certain reasons we never dealt in the shares, and advised our clients not to touch them. A stranger once wrote and asked for our opinion and advise, and we gave it, and advised him not to buy for investment. Well, the shares afterwards went up in the market, as they often did, through jobbing operations, and our correspondent then wrote and abused us for having given him bad advise. But if he went elsewhere, acted upon his own judgment, and bought shares, no doubt he soon found out his own mistake, though he did not write to tell us so. Now, we are not going for one moment to compare Richmond with Emma, but we are afraid, if we speak what we think, we may again get abused. Thirty or forty years ago, in the palmy days of East Rose, and other great English mines, shares were generally bought at about five years purchase—that is, to pay 20 per cent., and the mines were worked upon the good old plan of leaving half the ores discovered in reserve against contingencies and any sudden or temporary falling off. In this way we put several clients into them, and at our special advice they spent 5 per cent. of the dividend they received, and put the rest to capital account, so that in a few years they got back all their original outlay with 5 per cent., and good dividends besides for some years afterward. In the present day this would be looked upon as a very old-fashioned plan of speculating, but it is the only safe one, except to mere market speculators for a rise or fall in shares; and let us now test Richmond by this plan. The mine, as we understand its character from those who have worked in it, has large deposits of lead ore in flats—subject, like all deposits, to faults, &c., and to keep up present returns it is worked "up to the hilt." At 11*l.* per share, and in 34,000 shares, it is selling at close upon 600,000*l.*; to pay 10 per cent. upon this will take 60,000*l.* a-year profit, and the *whole* would have to be capitalised for ten years to get back the original outlay. A mine, unlike landed or real property, is a limited extent of ground below the surface, containing or supposed to contain, for there can be no certainty in the matter, a certain amount of mineral. As a natural consequence of being worked the produce will become exhausted in time, and the only way for an investor to be safe is to insure his capital against this in the old way we have mentioned; and especially in a mine where large reserves are not kept up. There is in Richmond also, as we understand, a lawsuit going on which may or may not seriously affect its position; but of this, not knowing its merits, or the American law as to mining setts, we shall say nothing. In this country no one can follow a mineral vein beyond his own boundary. Looking, therefore, to all these circumstances, and the uncertainty of mining generally (we are neither "bulls" or "bears"), we think if we did hold shares, we should be content to sell them at the rate of 600,000*l.* for the property, and let someone else take the risk and any further profit that might be derived from it.

ENQUIRER.—The value of a progressive mine—that is to say, one beyond a mere speculation—is determined by the various points to come off and the results expected, if they turn out according to anticipation, and it is upon a knowledge of these points that recommendations should be based. A stroke of the pick has often realised a fortune, though the right stroke has often been so long delayed that many shareholders have got disheartened, and sold out. This was particularly the case in East Caradon, adjoining the rich South Caradon. There were parties who stuck to the mine through thick and thin; and when it dragged its weary length along, with continued calls upon the pocket, shares dropped to a mere nominal price, and some were relinquished. Its agent, however, never lost faith, and kept his friends' attention so fixed upon one great point to be reached that they eventually realised large fortunes. We bought shares when the mine had scarcely a friend in London at 1s. 6d. each, let a friend have 50 at that price, and afterwards offered him 50*l.* each for them! Again, there never was a greater instance of mere local prejudice and ignorance displayed than in the case of South Caradon when first discovered. The western mines of Tresavean, United Mines, Great Consols, Penstruthal, and others were in full swing, and paying such enormous profits that the former mine was at about 2000*l.* per share, and the district was looked upon by agents generally as having the monopoly of the county in regard to copper. So when a new mining captain found a lode on Caradon Hill, in the eastern part of the county, it was pooh-poohed by the wise men of the West, who would have nothing to do with it. So the captain came to London about 1837 or 1838, we forget which, though we perfectly remember the story, and how we handled the first stones of ore raised in Caradon Hill. We were busy writing a book on mines at the time, and, though somewhat inexperienced in practical mining, the ore seemed to us everything that could be desired. But no, the dictum of the West had reached London. No one would look at the eastern mine, so the *poor* captain returned home, and on his way travelled with an old shareholder in Tresavean. To him he offered half South Caradon Mine for 5*l.* per share, and had his offer again refused. But Capt. Clymo was not a man to be baulked; he stuck to his own opinion and to the mine, and he and his brother soon realised large fortunes, for the shares refused at 5*l.* soon reached 2000*l.* each! But what is most singular is that the mine has not only paid some hundreds of thousands of pounds in dividends, and opened out a new district, but has seen out all its old rivals of the West, and is *paying still*. We cannot forget either at this festive season that Captain Clymo, the discoverer of South Caradon, was a famous maker of Cornish punch, celebrated as it was in those famous days of "account-house dinners," and it was at one of these at South Caradon, in 1845, that we first tasted Clymo's particular brew, and there are some, we think, still living who may remember the occasion of it.

PATELEY BRIDGE.—We referred to the way in which this mine had been crippled for want of capital in the *Mining Journal* for July 27th, page 817. In 4000 shares of 5*l.* each, only 3000 were issued, and of the sum thus raised—15,000*l.*—we suspect not much was working capital, and the mistake made by the directors was in keeping back 1000 in reserve when they could have freely been sold. When we wrote our remarks in July we were under the impression that the company still have the 1000 shares to issue, but it would seem they have been pledged to debentureholders. The mine we always looked upon as a good one.

A. X.—Sentien arrived too late this week.

MR. WILLIAM H. H. WATSON having had some years' experience in Practical Engineering and Mining in Cornwall, as well as two years' practice in the London Stock and Share Markets, begs to offer his advice and services to Shareholders and Intending Investors in Mines, and in the Purchase and Sale of Shares.

W. H. H. W. has Special Business in Tankerville, at 2⅝; Arendal, 3¾; Monydd Gorddu, 2½; Morfa Du, 17s. 6d.; Wheal Crebor, 5s.; Cakemore Preference 7½ per cent., at par; 100 Sentien Shares, &c.

Address: W. H. H. WATSON, 1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON, E.C.

1878.—The year now drawn to a close will be long remembered as a particularly bad one for Banks. One must go back to 1857 to find a similar state of things. So far as City Banks are concerned, there has fortunately been no actual stoppage, but the best of them have suffered sadly in prestige as well as in value. The two last months of the year are usually the bankers' harvest, but this time the anxiety to keep together a large stock of bullion has been so great that old customers have been refused and little business done. More than one have been aware that the presence of half-a-dozen elderly females, with antediluvian umbrellas, on the deposit side might have caused a "run," and have accordingly issued strict orders that every clerk should wear a smiling face, or risk losing his chance of promotion.

At the commencement of the year Anglo-Egyptians were but 10½, and Imperial Ottoman below 4*l.* These prices have more than once been doubled in each instance, but all the leading Banks have lost ground sadly—London and County having fallen 15*l.*, Westminster 14*l.*, Joint Stock 10*l.*, National Provincial 21*l.*, Union 7*l.*, and City 4*l.* Of course this shrinkage is very slight compared with the enormous depreciation in the value of shares in Scotch Banks, which in one instance (Clydesdale) exceeded 100*l.* per share, and may attain more serious proportions still, as it is not easily to be forgotten how City of Glasgow Bank shares were selling at 327*l.*, and could not be got rid of the day following the stoppage when backed by offers to give 500*l.* in cash away with each share.

Since the Fordyce affair a century ago there has not been such a bad piece of business for Scotland, and it will take many years for Scotch Banks to regain their former high reputation, though such a consummation is to be desired for many reasons. A system that allows any man possessed of a five-pound note to open a banking account, and having drawn cheques for a bottle of ink or a flitch of bacon to become delightfully uncertain as to the state of his balance, cannot easily be dispensed with.

Foreign Bonds have undergone some surprising changes. Original holders of Turkish stock no doubt, in many instances, simply looked on, hoping for prices to approach still nearer to what they paid; others, who only went in when the bonds were at the price of Mexicans, had great opportunities for money making. During the first six months of the year all the issues (1854 and 1871 excepted) doubled themselves in value; in the case of the 1858 loan a rise of nearly 300 per cent. was shown at one time. It was not until after the payment of the May coupon of the Unified that the rise set in in Egyptians. There was hardly a pause in the recovery until the Unified had been lifted from 31½ to 55½, and the Preference from 55*l.* to 72*l.* In January, Turkish '62, '65, and '69 fetched only 8¾, occasionally 8¾, and once or twice 9*l.* The Treasury bonds were neglected at 14*l.*, and the 1858 loan at 9½. The two favoured issues, 1854 and 1871, were more than 20*l.* below their present quotation. Holders of Costa Rica and Honduras must have noticed complacently that bad as the times are said to be they have not suffered, their precious bonds closing as they opened at the beginning of 1878, 5*l.* to 7*l.* and 2*l.* to 4*l.* respectively.

Railways have been out of favour all through the year, and there has not been a tithe of the business done in them there was a couple of years ago. There are no very material fluctuations to record. Passenger lines have increased in value, but the heavy ones have rather lost ground—Brighton A and Dover A were only selling at 116½ at the commencement of the year, Metropolitan District was valued (and perhaps not unfairly) at 53*l.* North British and Great Western finish nearly at the same prices with which they began the year. Caledonian have fallen from 119*l.*, Midland from 125*l.*, and North-Eastern from 147*l.* Chatham Ordinary have risen from 20*l.*, and the Preference from 79*l.* It is worth noting how Grand Trunks have suffered. The first preference have fallen 17*l.*, second 9*l.*, and third 6*l.* A rise may be looked for here in the spring. There have been opportunities of buying Varna shares at 1¼ and selling them at 4*l.*; at one time the Obligations were down to 2*l.*, but afterwards rose to over 6*l.* Mexican Railway Bonds (C) advanced from 75*l.* to 100*l.*, and the first preference from 4*l.* to 6*l.*

Most mining shares have lost ground materially. At the commencement of the year Vans were selling at 30*l.*, West Chivertons at 14*l.*, Great Laxeys at 22*l.*, and Leadhills at 4*l.* The 80 shares into which Wheal Owles is divided with 86*l.* 5s. paid were valued at 100*l.*, now with 173*l.* 15s. called up there is no market for them. Eberhardts now fetch less than half their former price. Richmond has been the most successful mine of the year, and has managed to pay 2*l.* 15s. per share in dividends. Holders of Port Phillip, Santa Barbara, and Sierra Buttes have had no grounds for complaint. Colorado shares after having had a spurt to 7*l.* close practically the same.

Holders of gas shares have fallen on evil days. Commercial Union are down 38*l.*, Gaslight A the same. There has been a drop of 50 per cent. in the case of Monte Video.

In the miscellaneous department Royal Aquarium shares have risen from 3*l.*, Brighton Aquarium shares have fallen from 11*l.* Milners Safe are 2*l.* higher, and General Credit 1½ lower. There seems a general opinion that a marked rise in all securities will ensue in the spring, it does not seem very clear how any further material fall can very well take place.

Stock Exchange business has, of course, been much narrowed in dimensions during the year, but what has been done has been safe in the main. If less business has been done there have been fewer losses. Of course it is the proper thing to do to grumble about the "bad times," but taken as a whole 1878 has not been such a bad year as many try to make it.

FERDINAND R. KIRK.

SATURDAY, DEC. 21.—The 12*l.* shares of the National Provincial Bank were dealt in to-day at 39*l.* In the early part of the week they fetched 43*l.* The shares with 21*l.* paid are now 22*l.* below what they were at the commencement of the year. Richmond shares declined to 10½, and Colorado to 1¼. Egyptian Unified, 43¼; Preference, 68¼; Turkish Fives, 11¼ to 11⅜; Brighton A, 127⅝ to 127⅞; Dover A, 120½ to 120¾; Chatham Ordinary, 2¼ to 2⅜; Great Eastern, 49⅝ to 49⅞.

MONDAY.—National Provincial Bank shares (12*l.* paid) showed no recovery, but were dealt in at 38¾, being still at a premium of 300 per cent. Several of the other leading banks were just on the point of closing at a fall of 1 or 2 per cent. on the day, but for the receipt, late in the afternoon, of over a million of gold at the Bank of England. This caused a rally all round.

TUESDAY.—A marked recovery took place in foreign stocks. Unified rose to 49, Preference to 69, and Turkish (1871) to 52½. Richmond, 10⅝ to 10⅞; Colorado, 1⅜ to 1⅝; Port Phillip, 10s. to 12s. 6d. Consols improved to 94 7-16, 94 9-16 for the account, Egyptian Daria rose to 58⅛, and the New Egyptian loan left off firmer at 1⅜ to 1⅛ dis.

WEDNESDAY.—Christmas Day. Stock Exchange closed.

THURSDAY.—Boxing Day. Stock Exchange closed.

FRIDAY (*Opening*).—Business is being resumed in rather a sluggish way. This is the first day of the settlement, and the principal feature is the extraordinary high rate charged for continuing. On Egyptian Unified and Preference the contangos range from 11 to 13 per cent.; 15 per cent. is charged on the Daria. On Brighton, A, Dover, A, and Metropolitan the charge is ¾ per cent., or 7*l.* 10s. for each thousand stock open. On Great Eastern 6s. is charged, and 12s. 6d. on Caledonian and North British. In mines, Richmonds are wanted at 10¾, and Eberhardts at 3¼. Parys Mountain, 6s. to 8s.; Rio Tinto, 2⅜ to 2⅝; Kapanga, ⅜ to ⅝; Port Phillip, 10s. to 12s. 6d.—*Two o'clock.*—Most stocks are higher. Unified are now 50*l.*, and Turkish Fives 11⅝. Brighton, A, is up to 129½, and Dover, A, to 122. Don Pedro, 7s. to 9s.; Frontino, 1¾ to 2; New Quebrada, 1⅜ to 1⅝; West Chiverton, 1¼ to 1¾; Rookhope, 6s. to 8s.; Javali, 5s. to 7s. North British is 1½ up to 90. Erie shares have risen to 1¾.—*Four o'clock.*—A weak Bank return has sent down prices somewhat. Brighton, A, are now 1*l.* lower than the highest reached at one time. British have receded ½ per cent. Chapel House, 2⅝ to 2⅞; Newport Abercarn, 3½ to 4; Bilson and Crump, 2 to 3; Cardiff, ⅝ to ⅞.

FERDINAND R. KIRK.

Mining Correspondence.

BRITISH MINES.

ABERLLYN.—John Roberts, Dec. 24: We have made good progress in the rise in the deep adit level, and the lode looks well for blende. Of course, it will be still understood that we have not yet cut through the lode, but in rising had met with the vein of shale that underlies the blende lode, and so, for the sake of expedition, kept with it. We have about 2 fms. more to get up to No. 2 adit, which I expect we shall accomplish by the end of next week. This work will be done much sooner than we could have anticipated when we commenced it as the ground then was. From five to six months was the time allotted, but it will be done in about 2½ months, which is a great thing for us in getting away the stuff from No. 2 level. Set to four men, at 4*l.* per fathom, to hole. The No. 2 end, driving to meet the rise is looking much the same for blende, with good patches of lead. We have about 1 fm. more to drive to reach the line of the rise, which will take about 15 days. Set to four men, at 10*l.* for that distance. The winze at No. 1 is now down 2 fms., and the part of the lode we have in the sinking is looking well for blende. I can see no difference in its value here, in the No. 2, and the rise at No. 3. But little progress can be made with the surface work whilst the severe frost and snow continue.

BEDFORD UNITED.—R. Goldsworthy, Dec. 19: We are driving by the side of the lode in the 150 and 127 east. The lode in the 138 east is producing stones of ore, and promising improvement. The stopes are producing the usual quantity of ore.

BETTWS Y COED.—H. T. Haley, Dec. 26: The lode in the deep adit east is 3 ft. wide, of the most promising character, and producing 20 cwts. of lead per fathom. The lode in the shallow adit east is still opening out well, worth 15 cwts. of lead, with a good mixture of blende. The lode in the stope west of winze is getting near the bottom of shallow adit, but is still producing good ore to the value of 15 cwts. per fathom. There is a good piece of ground west of this for another stope. The carpenters are getting on well with the connections for the dressing machinery, &c., but the weather is much against them. All other surface work is suspended until the weather moderates.

BLAEN CAELAN UNITED.—Jonathan Pell, Dec. 26: The continued frost has prevented us from resuming operations; a partial thaw last Thursday and Friday enabled the pumping-wheel to keep out the water, but this week it freezes harder than we have known it for several years.

BODIDRIS.—H. Hotchkiss, Dec. 24: I have no important change to report to-day. The 45 end is still in a very promising lode, 2 ft. wide, containing blende and spots of lead ore, and I am pleased to say all points are progressing satisfactorily.

CAMBRIAN MINES.—T. Glanville, Dec. 26: ESGAIR FRAITH: You are aware that for some time past the frost has been too severe to carry on any dressing operations, we had, however, been able to keep our water courses. The pumping and drawing machinery clear of ice up to the 14th instant, but on that date a heavy fall of snow completely stopped both underground and surface operations, since then we have been at a complete standstill. I am pleased to say we have a splendid course of copper ore in the 70 yard level, east of Esgair Fraith eastern shaft, richer than any I have heretofore seen in the mine. All other points remain as usual. At Esgair Hir we have still two men cross-cutting south from deep adit level towards the main part of the great lode.

CLEMENTINA.—J. Roberts, Wm. Sandoe, Dec. 24: We have quite completed cutting down the shaft to the 15 below adit, and shall commence at once casing and dividing down the shaft, when it will be quite ready for putting down the new work. The 60 ft. water wheel is at Conway, and the vessel is only waiting the breaking up of the ice on the river before coming up to Trefriw with it. As the 15 is dry and was productive of good lead nearly close up to the forebreast of the north end, we would strongly recommend the driving of this end further, as we fully believe that only a short distance will bring us again into a good run of productive ore ground.

COMBMARTIN.—T. Comer, Dec. 26: There has been very little alteration in the different points of operation during the past week. The caunter lode in the adit level north-west is 3 ft. wide, well defined, and yielding some good lead and blende, which we are saving for dressing, and the lode has every appearance of further improving.

DE BROKE.—J. Phillips, Dec. 26: The weather keeps exceedingly severe as to frost, but there is very little wind, so that one of the wheels is going pretty regularly, and the other at intervals. A day or two since we broke a spur wheel connected with the crusher, but it will be ready for replacing in a few days. The stopes are looking fairly well, including a new one in the bottom of the drift west below the 25, where the lode is about 2 ft. wide, and producing 20 cwts. of lead ore per fathom. Two trucks containing 14 tons of George Burr's ore are loaded, and another with 3 tons in it awaiting the remainder of the ore, which is in the bin here, but it is with the utmost difficulty we can get the carriers up.

DENBIGHSHIRE CONSOLIDATED.—R. Prince, A. Francis, Dec. 26: There is a favourable change taking place in the 112 east, and from the strong character of the lode we expect to meet large deposits of ore in the bearing measures lying between us and coal formation. The 112 west presents a very promising appearance, and the 80 west looks splendid.

D'ERESBY CONSOLS.—J. Robert, W. Sandoe, Dec. 24: The end driving towards Cobblers' lode has become very much harder during the past week. The rough which we have had for the last two months has disappeared. We have driven now 13 fms. from the commencement, being rather more, we calculate, than half the distance to cut the lode. We have set again at 12*l.* per fathom for 3 fathoms.

D'ERESBY MOUNTAIN.—J. Roberts, W. Sandoe, Dec. 24: The lode in the end at No. 1 level is 2 ft. wide, and one part of it is harder than it has been, but altogether is much of the same value for lead. The rise in No. 2 is of much the same value as last week. The lode is 2½ ft. wide, and a fine mixture of lead and

blende, and will open up good stopes when we communicate with the winze in No. 2. The stope in No. 4 is without any change to notice since last report. The winze at No. 4 is still dry, and we hope to be able, if it continues so, to get down to the No. 5 in about a fortnight. We have arranged to commence the shaft on the top of this winze on Thursday. The No. 5 has been extended 3 fms. during the past week. The shaft on the heading in the valley has been cleared to the bottom, and is about 5 fms. deep. It seems that they had only carried a part of the lode, and had stoped away each end of the shaft, but the present bottom shows good spots of lead. We consider it a very kindly and promising lode, and capable of yielding large bodies of lead in depth. Our next consideration will be whether it will not be better to sink a shaft in the soft part of the lode instead of this, and then cross cut through the lode 10 fms. deeper. All our surface operations are at a standstill on account of the severity of the weather.

EAST CRAVEN MOOR.—David Williams, Dec. 26: New Shaft from Surface; Having sunk this shaft to the depth required—14 fms. below the 42—we have commenced casing, dividing, and putting in a ladder-road to the bottom. The vein in the bottom is over 4 ft. wide, and producing 40 cwts. of lead ore per fathom. Other points without change to notice this week.

DUBBY SYKE.—W. Vipond, Dec. 25: There is no change in driving east on the vein. We shall drive on a few fathoms before rising into the limestone.

GAWTON COPPER.—George Rowe, George Rowe, jun., Dec. 21: The ground in the 117 cross-cut is still mixed up with mundic and ore, with an increase of water, showing every indication of being near the lode, where the ground is stiff and rather slow for progress. The lode in the winze sinking below the 105 is improving, worth 15l. per fathom. All other points are without change.

GORSEDD AND MERLLYN CONSOLS.—Dec. 26: There is a great change coming in the south cross-cut, and we think the lode is now close at hand. There is nothing further yet intersected in the north cross-cut. The rise in the 70 west continues to yield splendidly, but we cannot dress anything on account of the frost. The progress during the setting month has been as follows:—The cross cut north is extended 4 yards 1 foot. The cross-cut south is extended 3½ yards. The 70 west is extended 6 yards. The stoping 2½ yards. Tributers at 5l. per ton have raised 3 tons 15 cwts. of lead from the west level, and from other parts 14 cwts. We have a nice pile at surface.

GREAT HOLWAY.—Dec. 26: Garden Shaft: I am glad to say that the lode in Garden shaft maintains the improvement noticed in my last, and we have now a rich lode producing lead and blende. I have forwarded to you a fine specimen taken out during the past few days, which I am sure will be pleasing for the shareholders to see. Our prospects altogether at this point are very good. We are unloading the machinery and carting it to the mine as fast as the frosty weather will permit. I will send you full report for the board meeting next week.

GREAT RETALLACK.—T. Harris, Dec. 21: The men have commenced to drive west from the bottom of the boundary shaft in a favourable part of the lode, in which we find good stones of blende. I have to-day set the men to drive to hole or the month at 2l. per fathom, the men to pay all cost of hauling their stuff. I expect we shall communicate with the old workings within this month.

GREEN HURTH.—W. Vipond, Dec. 20: The ore in the branch in the sump continues to yield 1 ton per fathom. When the branches are bearing like this in the hazle it is almost certain the vein itself will be good in the same sill, and when we reach the limestone below I consider there is not the slightest doubt about the vein proving rich in it. With the hazles proving productive below the incline level it will give us more stoping ground below, independent of the next limestone, than we had above. No. 3 cross-vein continues to yield about 8 cwts. of ore per fathom.

HARWOOD.—W. Tallentire, Dec. 20: Herdship, South End: The beds are now dipping, which is indicative of some vein strength being near at hand. We will now commence driving south in the upper or productive part of the limestone.

HINGSTON DOWN.—Thomas Richards, Dec. 26: Bailey's Shaft: In the 172 east the lode continues exceedingly promising, and will produce 4 tons of ore, or 8l. per fathom. In the 172 west the the lode contains capel, quartz, mundic, and good stones of copper ore—very promising. In the stope in the back of the 172 east the lode is worth 7 tons of ore, or 40l. per fathom. In the 160, west of Nicholls' winze, the lode is showing signs of improvement. The lode in the tributers' sink, in the bottom of the 160, is without material change, but the water is very troublesame, and for the present this is suspended until the 172 west is further advanced to drain it. In the tributers' stope and pitch in the back of the 110 the lode has a very promising appearance, and is worth 4 tons of ore, or 6l. per fathom. In the deep adit the ground is moderately easy, and fair progress is being made.

LADYWELL.—A. Waters, Dec. 26: The new south shaft below the 16 continues in hard ground; lode composed of spar, with stones of ore. The winze below the said level, south of shaft, is going down in the big cavity reported on some time ago; lode 4 ft. wide, spar and gossan, with solid lumps of ore. We shall see more of the lode here, and be able to give more details by next week. The 16, south of the winze, is in a lode 2 ft. wide, spar and ore, of a promising character. The 72, south-west, on New Britain lode, is looking promising to yield ore soon. The weather is very severe, and dressing operations are out of the question at present.

LEAD ERA.—J. A. Ede, Dec. 26: In reply to your enquiry, allow me to observe that since August 18 last I have sunk two shafts and developed the upper flat at a depth of from 5 to 6 fms. from surface at points 700 yards apart. Thus the continuity of the lodes is confirmed, and I have no doubt the company's concession is traversed throughout its entirety. There are some six, if not eight, east and west lodes pregnant with promise, constituting those of the Minera and other equally promising veins. A masterly champion north and south lode is now being opened out, and will form a cross cut to intersect the lodes above referred to at right angles. These intersections will occur at a depth where profitable deposits of ore may confidently be anticipated. It is a feature of importance in connection with this property. Development will prove rapid and economical, as trifling machinery and plant will be required to discharge the ores from underground, and when at surface render them marketable. Hence the heavy expense often attending mining operations is wholly dispensed with. Our next operations will be to continue No. 2 trial shaft to the lower flat to a further depth of 10 fms., and this is a feature which constitutes a pioneer point of great promise. The immediate future is fraught with the liveliest interest.

MELLANEAR.—John Gilbert, Dec. 24: The lode in the 30, west of Gundry's shaft, is 3 ft. wide, and worth 1¼ ton of copper ore per fathom. The lode in the 40, west of shaft, is 3 ft. wide, and worth ½ ton of ore per fathom. The lode in rise in back of this level is 3½ ft. wide, and worth 2½ tons of ore per fathom; this rise is up 13 fms., and we shall commence at once to drive east from the top of the rise to communicate with the 30 west of Gundry's shaft; there is about 4 fathoms further to drive to connect these levels. The lode in the 50, west of shaft, is 3 ft. wide, and worth 2 tons of ore per fathom. The lode in the 60 west of shaft, is 4 ft. wide, and worth 2½ tons of ore per fathom, and some saving work for blende. The winze in the bottom of this level is worth 2 tons of ore per fathom. The lode in the 70, west of shaft, is 5 ft. wide, and worth 3 tons of ore per fathom, but we are not carrying all the lode, and the part standing will produce very good stones of ore. The rise in the back of this level, west of shaft, is also worth 3 tons of ore per fm. The lode in the 80, west of shaft, is 5 ft. wide, and worth 2½ tons of ore per fathom. The lode in the 90, west of shaft, is 5 ft. wide, and improved to 2 ton of ore per fathom. The lode in the winze in the bottom of this level, east of shaft, is worth 2½ tons of ore per fathom. There is no change in any of our bottom levels, except the 100, west of the skip-shaft, which is now worth 2½ tons of copper ore per fathom; and is producing some very good stones of tin. The weather during the past week has moderated a little, and we have been getting on better with our surface operations, especially in the dressing department.

MINERAL CORPORATION OF GREAT BRITAIN—HAFNA MINE.—Wm. Bennetts, Dec. 26: There is no change in this mine calling for any special remark since last week's report. The mine still continues to look well.

GREAT D'ERESBY.—I have put the men to work to commence the deep adit in the valley, which shall be pushed on with all speed.

MONYDD GORDDU.—J. G. Green, Dec. 24: All bargains worked uninterruptedly during the past week, excepting the winze sinking below the 24, which owing to the frost, and consequent short supply of water for drawing, and accumulation of stuff in the levels, we have been obliged to suspend, but as the ground is very easy for progress we can soon make up for lost time when opportunity offers. There is a nice branch of lead in the bottom, having a westerly dip. In driving the 34 west the lode is becoming more compact and congenial for ore every foot we advance, but owing to this fact it is much more difficult for boring, and our progress is not so speedy; it carries to-day a nice branch, containing mundic and spots of lead. The ore ground on the junction of south caunter with main lode in the back of the 24 is lengthening as we go up, now worth for 8 fathoms long at least 30 cwts. per fathom, and as we have this section of ground nearly intact to the level above it will be of considerable value to our samplings. It would appear that the 24 has been driven through a poor part of the lode, where it has been disordered by vughs and loose ground, for as we go up the lode is much more solid, and as a consequence carries richer ore; and as the 34 end now presents a similar characteristic, I look for a rich course of ore as we advance. We have not intersected the south caunter in the cross cut under this stope, but I expect to do so in about 2¼ fathoms further driving, and I look for a good discovery in this direction. The stope in the 12 has further improved, worth for 8 fathoms long 20 cwts. per fathom; this stope will be through to adit in about two months' time. On the whole, I am glad to say the mine never looked better than it does to-day. The parcel of ore was forwarded on Saturday, the price of which seems to be to be very much too low, containing as it does 76 per cent. of lead at (say) 2s. 8d. per unit=10l. 2s. 8d.; 22 ozs. per ton lead, or 16½ ozs. per ton ore of silver, at 4s., 3l. 6s. The price should be 13l. 8s. 8d per ton, even with the present low price for lead and silver, and allowing a fair margin for the smelter. The 70 tons we have sold since dressing has been recommenced would with the old prices have left at least 500l. clear profit. Frost has come again with increased severity, and I am sorry to say has made it quite impossible to continue with dressing, and I have taken the necessary steps to cut the cost as low as possible until we can recommence with sales of ore.

MORFA DU.—T. Mitchell, Dec. 26: There is no change in the bottom level that calls for any special remark this week. At the 36 we have just cut into a vugh, which shows we are getting near the lode, and we hope soon to see the run of bluestone seen in the bottom level. Since we holed through in the back of the 36 the men have been stoping down some good bluestone, and the place is now made convenient for working. Saturday next will be setting-day, when we hope to set the raising of the ore by the ton.

PANDORA.—H. Nottingham, Dec. 26: Owing to a breakage in connection with the crank-pin of the pumping-wheel, and of the holiday yesterday, we have done but little in the bottom drivings this week. The end on the new lode is worth 30 cwts. of lead for the width of the level, and 20 cwts. of blende per fm. The end on the Goddard's lode is not rich enough to value. The rise in the Goddard's lode is worth 20 cwts. of lead and 15 cwts. of blende per fm. No. 1 winze sinking below the 23 new lode is worth for width of lode 3 tons of lead and 1 ton of blende per fathom. The end and No. 2 stope as last reported.—Goddard's Lode: The No. 1 winze north is worth 15 cwts. of lead and the same of blende per fathom. The No. 1 south is worth 20 cwts. of lead and 25 cwts. of blende per fm. The No. 3 is worth 15 cwts. of lead and the same of blende per fathom. Several of these places are getting very full of stuff, as we have not been able to draw or dress any stuff for the last fortnight. We are doing all we can in preparing for the engine to pump in case the wheel should be blocked up, which I much fear now. The weather has been extremely severe, and we are entirely blocked up with snow as well. Unless some of it clears away we cannot get coals up to work the engine. It has been with great difficulty that we managed to get 2 tons of lead down from here belonging to lot just weighed off.

PARYS MOUNTAIN.—T. Mitchell, Dec. 26: The last 3 or 4 ft. driven in the 80 south contains a mixture of sulphur, peach, and small strings of copper ore, and on the whole it presents a lodey appearance. There is scarcely any underlie in this run of ground, and the said strings of copper are dropping almost perpendicularly.

PATELEY BRIDGE.—C. Williams, Dec. 26: The Rake vein, in the 30 east, is improving, and from all appearances entering into another fresh run of ore ground; the ore-bearing part is from 3 to 4 ft. wide, filled with gossan and lead ore, worth for the latter about 35 cwts. per fathom. The vein in the stope in the back over this level is 4 ft. wide, and worth 1 ton of lead ore per fathom. The tribute pitch in the back of ditto is worth 16 cwts. of lead ore per fathom. The Rake vein, in the 20 east, is from 5 to 6 ft. wide, consisting of gossan, carbonate of lead, and blue lead ore, worth for the latter 12 cwts. per fathom. The Lumb vein, in the 20 west, is from 8 to 10 ft. wide, and producing 1 ton of lead ore per cubic fathom, and likely to soon improve. The end is within about 30 fathoms to another rich run of ore ground, which was left some years ago on account of the great influx of water at the time. Fielding's vein, in the 20 north-west, is without change, worth 17 cwts. of lead ore per fathom, and looking very promising. We have commenced cutting ground for the new engine. Owing to the severity of the weather the dressing and all surface work is blocked up.

PENNANT.—Dec. 26: The operations at the 40 are very promising indeed, and the stopes are turning out good lead ore, and seem likely to continue to do so. Our operations at the dressing-floor are, of course, suspended in consequence of the frost.

PENSTRUTHAL.—Wm. Polkinghorne, Dec. 26: The 88, driving west of Highburrow shaft, is still without change. The 88, driving east of Highburrow, we have intersected the lode, but it is still mixed with the elvan; by this reason it is still unproductive for mineral. In the 72, driving west of Highburrow shaft, the lode still maintains its size and appearance, and is much the same in value as reported for the general meeting. In the winze in the bottom of the 58, west of Highburrow shaft, the lode is 3 ft. wide, producing copper ore; the men are making good progress in sinking, and I hope to communicate the winze with the 72 in one month from this time. In the 34, driving east of Highburrow shaft, the lode is worth for tin 6l. per fathom. The 46 cross-cut driving south in the last few feet driving we have met with a hard capel, which has made it spare for driving.

ROMAN GRAVELS.—A. Waters, Dec. 26: The new south engine-shaft is being sunk below the 110 with the usual progress; ground of a favourable character. There is no material change in the mine for the last month or two. The stopes yielding ore in satisfactory quantities. The weather is very severe, but we manage to keep going on the dressing-floors, having water in all the jiggers, buddles, &c.

ROOKHOPE.—T. Davidson, Dec. 26: In driving the adit level we have holed into a cross cut and winze below us, and the vein at this point is extremely poor, but I expect an improvement forward again as soon as we can get this open ground filled up. In cross-cutting in the south side of the vein, in the 15, No. 3 on the section, east of Low shaft, value 8 cwts. per fathom. In cross-cutting into the north side, from the 25, in No. 15, east of Gin shaft, there is strong vein material, but no ore to value. Driving west from winze in No. 7, east of Gin shaft, value 10 cwts. per fathom. Driving west from winze in No. 2, east of Low shaft, 4 fms. below the 25 sole, value 10 cwts. per fathom. Cross-cutting into the south side from the winze in No. 7, east of Low shaft, 4 fathoms below the 25, no ore to value. Rising in the south part of the vein at Low shaft bottom extremely hard; value 8 cwts. per fathom.

SAINT PATRICK.—Wm. Francis, Dec. 24: I have no change whatever to report in either of the drivages this week, the progress being made in each is satisfactory.

SOUTH CAMBRIAN.—Absalom Francis, Dec. 24: Our men during the past week have been engaged in stoping down the lode to its full width behind the adit forebreast. The lode continues very rich, producing blende ore in large quantities, and almost solid, which in breaking down seems a mass of lead ore. From its colour and lustre, and as our adit is gaining considerable height going eastward, I have no doubt from appearances that in a few fathoms more it will give place to lead ore. I have before spoken of the probability of its doing so, and every fathom we gain in height confirms the opinion.

SOUTH DARREN.—Henry James, Dec. 26: I am just up from underground. The skip-road is finished to the 100, and the lodges near completion. The 100, west from shaft, is being driven by the side of the lode. The lode in the 100, east from No. 2 winze, is worth about 21l. per fathom. In the western end from winze we are in course of stripping down the lode to prove its value; as far as seen it is looking well, and worth 42l. per fathom. The lode in the 90 west is looking exceedingly well; worth 45l. per fathom. The value of the stopes throughout the mine is without any notable change from date of general report. The weather still continues to be very severe, and nothing can be done in the dressing department yet.

SOUTH MOLTON CONSOLS.—T. Harris, T. May, Dec. 26: We have little or no alteration to report in the nature of the ground in the adit cross-cut since we last advised you. Fair progress is being maintained in the drivage.

SOUTH ROMAN GRAVELS.—John W. Powning, Dec. 26: There is no particular change in the mine since you were last advised. We will send you a full report next week.

TANKERVILLE.—A. Waters, Dec 26: Watson shaft below the 206 fm. level is now down 6 fms. 1 ft.; ground as for some time past. The ends and stopes are without change worthy of remark since my report of the 19th inst. The weather is very severe, but we hope to keep dressing the crop ore on upper floors. We are sending off ore as fast as the carriers can take it. The frost was so great for some days that ore weighed into wagons could not be discharged again for some time.

TEESDALE.—J. Slack, Dec. 19: West End Forehead: The two branches of the vein in this working having come together again have made a very substantial improvement; the upper portion of the forehead contains a good strong body of ore.—West End Stope North: The further this working goes north the stronger it gets, both in quantity of ore and vein.—West End South Stope: There is more ore in the upper portion of this stope than we have ever had.—North End Stope: Two men have been working out an old man's middling, and have got 15 wagons of fair bouse; this will last some two months longer. Dressing is completely stopped with frost and snow. We have 40 bings of undressed ore, exclusive of what is dressed and in course of dressing. There has never before been so much lead ore to see in the workings as there is at present. All the men except four have been suspended until dressing weather sets in.

TEMPLE.—Dec. 26: No. 1 Level: The lode is improving, and is now considerably richer in lead, very good stones having been broken since the report, but the produce is not sufficiently regular to admit of the lode being valued or its produce estimated with any degree of correctness.—No. 2 Level: The lode taken down is much better than that taken down last, and is letting out much water; it seems coming out of the hard ground in about the same state it was on the other side of it—there is good blende in the lode about 2 in. wide, and a mixture of lead and blende.—No. 3 Level: The lode is not so good as it was, but is widening, with a good mixture of spar and blende, with spots of lead in it. The winze is not yet communicated with No. 2 level, but is so nearly so that the water is drained away from the bottom by No. 2 level. The automatic dressing apparatus is delivered on the mine, but the weather has been very unfavourable for making progress with its erection.

WEST CRAVEN MOOR.—David Williams, Dec 26: Blackhill Adit Level: The vein in the end of this level has greatly improved during the week, being at present fully 2 ft. wide, composed chiefly of spar, sulphate of barytes, with occasional stones of ore. This end is pressed forward as fast as possible to get under the valuable runs of ore ground going down in the soles of the 20 at new west and new east shafts. In the cross cut south behind the end we have intersected several branches of spar, with gossan and spots of ore. The stopes throughout the mine are producing ore as for some time past. Owing to the severe weather we are unable to proceed with the grating and dressing. I enclose a tender for the parcel (20 tons) of pig lead ready for sale at the mill.

WEST GODOLPHIN.—John Pope, Dec. 24: There is no change in the mine worthy of remark since last report. I am having everything pushed on as fast as possible, and will send full report in time for the committee meeting.

WEST PATELEY BRIDGE.—David Williams, Dec. 26: Craven Cross Shaft: The drivage east from bottom of shaft is in about 4 fms. The vein, which has been nipped, is now 18 in. wide, and producing saving work for dressing. In the west end the vein is 3 ft. wide, and producing branches of lead ore, being saving work for dressing of good quality; we have commenced cutting plat in this end. In the 56 west the vein is 4 ft. wide, composed of spar, barytes, and lead ore, worth of the latter 20 cwts. per fathom.—No. 2 Shaft: The 20 east is now in a vein 4 ft. wide, filled with gossan, spar, and solid stones of lead ore. A stope in back of the level, by two men, worth 10 cwts. of lead ore per fathom. In the 28 east we have commenced rising to communicate with the 20 for ventilation and proving the upper beds, and I am pleased to say the vein is opening out most satisfactorily, being much wider, and producing solid leaders of lead ore. In the cross-cut south to the parallel veins the ground is easier to work, and better progress is being made; we have this week driven through a branch of spar with spots of ore. Owing to the continued severe weather dressing operations are at a standstill.

WEST ROSKEAR.—H. Stephens, W. Bennetts, Dec. 24: There is no particular change in the lode to notice since our last. The adit has failed, and the water flowed back into the mine, which prevented the sinking of Stephens' shaft; the lode in this shaft when we left off sinking was looking remarkably well. We have secured the adit so as to let the water down, but it will take several days more to thoroughly repair it, so as to be safe for the future. The weather has been very severe, which will cause many things to fail.

WEST TANKERVILLE.—Arthur Waters, Dec. 26: The 86 south is going forward in a lode which is split into two parts, and at present not to value. Stope in back of this level south is worth 15 cwts. of lead ore per fathom. There are eight tribute pitches at work, yielding ore in paying quantities. We have not been able to dress ore for some time owing to the severity of the weather. Weather permitting we should soon be able to sample 25 tons of lead ore.

WEST WHEAL PEEVOR.—W. T. White, Dec. 21: Since my last report a fortnight since I am pleased to say very satisfactory progress has been made in the sinking of Michell's engine-shaft and the driving of the shallow adit end west. The shaft is now down to its desired depth for communicating to the shallow adit level, and to-day I have set to the men both in the shaft and end to drive towards each other. Communication I expect will be made at these two points in the course of a week's time, when the advantages for future operations will be considerably improved; as depth is attained the ground appears to be getting far more settled and congenial, and judging from the productiveness of the western ends in Wheal Peevor, good courses of tin will most assuredly be met with.

WEST WHEAL TOLGUS.—Dec. 24: In Taylor's shaft the ground continues much the same as it has been, with the exception of more white iron in, which we are glad to see, as it is mostly found about the ore ground. We are getting on tolerably well in sinking, and hope to get down nearly 12½ fms. below the 145 against setting day, and then begin to drive the 155. The lode in the 145 end west is smaller than it has been, but yielding just the same quantity of ore as last reported—2 tons per fathom. We commenced taking down the lode in the side of the 145 east of No. 1 cross-cut to-day; it appears to be large, with good stones of ore through it. We hope to take it down against setting-day; it is standing for more than 2 fms. long. The stopes in the back of this level continue to yield tolerably well. The lode in the 135 end west is 3 ft. wide, yielding 3 tons of ore per fathom; not rich work, but orey all through. The winze under this level, west of the great cross-course, continues to yield 5 tons of good ore per fathom. The stopes in the back of this level are yielding very well, and also the stope in the bottom of it, west of the little cross course.—Richards' Shaft: There has not been much done in the 105 cross-cut since our last report, in consequence of some little hindrances in the engine. There is no alteration in the 65 fm. level end west. We are preparing for our next sampling, which I hope will be the usual quantity and quality.

WHEAL AGAR.—Wm. Hambly, Edw. Moyle, Dec. 21: Month's Report: The engine shaft has been sunk 6 ft., the men being now engaged cutting plat. The shaft is 10 w down 9 ft. below the 215; when this is finished, we shall put four men to rise in the back and hole to the sump-winze, which will enable us to increase our returns. The stopes are set to 24 men, at 8s. 6d. per ton of tinstuff. The 205, driving east, has been extended 11 ft. 2 in., by four men and two boys, at 16l. 10s. per fathom; this end is still poor, being above the sheet of tin. The winze below the 170 to the 185 has been completed, and ladder-road fixed; this has greatly improved the ventilation at the bottom of the mine. The 120 cross-cut north, under the new shaft, has been driven 10 ft. 9 in.; set to three men and a boy, at 6l. 10s. per fathom. The winze below the 80 has been sunk 11 ft. 11 in.; set to four men, at 6l. per fathom. The rise above the 48 has gone up 15 ft.; set to four men, at 7l. per fathom. New shaft has been sunk 6 ft. 7 in.; we have 4 to 5 fms. to hole to the 48 rise; set at 11l. per fathom. The severe frost and snow storms have retarded our surface works. The machinery is working well.

WHEAL CREBOR.—John Andrews, Dec. 24: The lode in the 120 east end is 2½ ft. wide, composed of quartz, capel, mundic, and a little copper ore. The two stopes in the back of the 120 are worth respectively 8l. and 6l. per fathom. In the 108 end east the lode is getting more settled as it leaves the influence of the cross-course, which is now 2 ft. wide, and yields occasional good stones of ore. All other points are without change.

WHEAL PEEVOR.—W. T. White, J. Pryor, Dec. 21: Setting Report: The fixing of the tramroad and enlarging of the plat at the 80 will be completed some time this month, when the driving of the 80 end west will again be resumed, the lode in which is worth 20l. per fathom. The 70 to drive west, at 6l. 5s. per fathom; lode worth 12l. per fathom. Two stopes in the back of this level, at 40s. and 50s. per fathom; lode worth in each 11l. per fathom. The 60 to drive west, at 8l. per fathom; lode worth 12l. per fathom. Stope in back of this level, at 50s. per fathom; lode worth 10l. per fathom. The 48 to drive west, at 5l. 15s. per fathom; lode worth 13l. per fathom. Rise in back of 48, west of cross-course, at 7l. 10s. per fathom; lode worth 15l. per fathom. End to drive east to main rise at 48, at 5l. 10s. per fathom; lode worth 9l. per fathom. Stope in bottom of 36, at 2l. 7s. 6d. per fathom; lode worth 11l. per fathom. The 36 to drive west, at 7l. 10s. per fathom; lode worth 36l. per fathom. Rise in the back of the 36, west of cross-course, at 7l. 10s. per fathom; lode worth 14l. per fm. Two stopes in back of this level, at 50s. and 55s. per fathom; lode worth respectively 10l. per fathom. The 36 to drive east of main rise, at 6l. 10s. per fathom; lode worth 8l. per fathom. The 26 to drive west of main rise, at 5l. 5s. per fathom; lode worth 9l. per fathom. The 26 to drive west of cross course, at 5l. per fathom; lode worth 10l. per fathom. Main rise in back of 26 fm. level west, at 8l. per fathom (carried 12 ft. long); the lode is worth 10l. per fathom. Cross cut to drive south at 36 fm. level west to intersect south lode, at 8l. per fathom. Cross-cut to drive south at deep adit west, at 5l. per fathom. Our tribute pitches are without change, the setting of which takes place next month. The mine still opens up most satisfactorily, and although the weather of late has been very severe our dressing and all other work has been carried on without the slightest hindrance, and our returns of tin are more than equal to any former period.

WHEAL UNY.—William Rich, Matthew Rogers, Dec. 23: The lode in the 172, west of Hind's, yields low quality tinstone. The rise in the back of the 160 west is worth 10l. per fathom. The rise in the 160 east, towards King's shaft, is unproductive. The 150 end west is worth 5l. per fathom. The 150 end east is poor. The 130 end west is worth 8l. per fathom. The 130 end east is unproductive. The back of the 60 west is worth 11l. per fathom. We sold on Saturday last nearly 21 tons of tin.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, Dec. 21: Produce 11 days, first division of December, 12,000 oits.=4650l.; yield, 6 3 oits. per ton.—Telegram, Dec. 23: Profit for the month of November, 5100l.

DON PEDRO.—Mine captain's letter, dated Nov. 24: General Remarks: The ore has been derived from the No. 8 new shoot at and below the 35, and south side of openings. The ore continues of low quality.—No. 8 New Shoot, No. 2 Incline Shaft: Progress at this point has been very materially retarded by the stopages of the 60 ft. wheel for repairs, also by the large quantity of fine sand and old timber and water mentioned in our last, which we have to contend with.—No. 4 Stope East below the Adit Level: The branch is in close juxtaposition to the back laths of the workings beneath; the ground at this point is in a somewhat crushed state, and requires careful handling.—The Rise in the Back of No. 4 Stope: The branch is much smaller and pinched as we extend thereon in a north-westerly direction.—Pearce's Pillar: Very little has been done here since last advised.—South Side Openings, No. 1 and 2 Stopes East: The lode in both of these stopes continuing of very low-class, they have been suspended pro tem. In one stope opened in the workings above the No. 2 stope, the lode in the same is of fair size and appearance, of a low quality, but presents indications of improvement.—Prospective Running Work, Inclined Sump Shaft: Resumed sinking on the 18th. Shaft fork cleared, collar put in, and laths started, ground hard, progress slow, as the repeated stopages of the wheel throw the water in.

The ground in the 40 cross-cut is becoming a little softer, and emitting a little more water than heretofore; the progress is somewhat slow, for the same reason as that of sump shaft. A smiths' bellows has been fixed, and pipes connected from same in shaft to the cross-cut to throw in air, as the air in the end is very dead. Very little has been done in No. 1 side level since last advised. In No. 2 inclined shaft two sets have been put in and lathed. In No. 5 shoot, new level, an incline rise started north-east to explore this shoot in that direction. The lode is very large, of very fine and promising appearance, but so far not auriferous. The roadways have been kept in fair order. Several props have been put in the various stopes for supporting the caps, &c. The 60-ft. wheel and machinery have been idle 15 hours 6 minutes for putting in sixteen bolts in north side of centre plates, and filling pieces round the keys to prevent cranks falling, tighten and wedge wood yokes, tighten the bolts of the diagonal stays, also distant rings, &c., and put in half-inch thick saddle in the north side branches of lockpin, which was worn badly and loose, examined both flange joints, and both are as perfect as when last put in repair; nothing shifted or broke to date.—Machinery: Changed 15-in. bucket and rods, put in two rolls to carry bucket rods, packed plunger-pole, and bound two rods with rope, which carries pole, and wedged some rolls, and changed some linings, &c., and many other little jobs done too small to merit special mention.—Storms: A very severe storm was experienced here on the 20th, which caused considerable damage to some of the reduction works and roads, &c., which admits of no delay to put in repair, consequently are attended to with all available force.

— Telegram from Rio, dated Dec. 26: Produce cleaned up (first division of December), 1350 oits

ALMADA AND TIRITO CONSOLIDATED.—Telegram from Mr. Clemes: We have remitted you ores, $1000; bullion, $4500, Dec. 7.

GOLD RUN.—J. A. Stone, Dec. 4: We have just shot a blast of 450 kegs of powder. We think it the best blast we have ever seen; it is generally acknowledged by those who saw it to be so. We feel that we have achieved another success. As yet we have no water, but expect soon to inform you that we have commenced washing.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Six days' run (two furnaces), 620 tons of ore, $36,000.—RICKARD.

— R. Rickard, Dec. 4: There is no change of importance to report from any of the different workings of the mine since my last. The 400 cross cut from quartzite drift has been extended 29 ft., ground very hard. The drift from rise, 80 ft. above the 500, has been extended 9 feet, making a total distance of 106 feet in ore. The drift on a level of the 500 has been extended 54 feet, making a total distance of 96 ft in ore. No. 2 winze is connected with the 600 cross-cut; shoot is being put in, and everything made ready for taking out ore. The 600 cross-cut is being extended south to explore the ground in that direction. A cross-cut has also been started north for exploration, and has been extended 15 ft. The 800 on quartzite has been drifted 23 ft. without any change in the ground. The 900 west has been drifted 30 ft.—ground very favourable for drifting. The 1000 feet level has been drifted 16 ft on the fissure; it now shows more broken ground than it has for some time, which is a favourable indication for ore. The reconstruction of the smelting works is about completed, with the exception of the flue, the iron for which we expect to receive some time next week; as soon as received it will be put together, and when finished the furnaces will be started up.

COLORADO UNITED.—The superintendent in his letter, dated Dec 6, says: The mine looks well throughout. The stopes in the 8th level are looking much better than for some time past. The drift running west, 80 ft. below the Union Tunnel, has changed for the better, and we have cut into 3 in. of nice mineral. In the drift running east in the Silver Ore Tunnel we have cut into 4 in. of good mineral; the lode looks very well, and is strongly defined. At the breast of the Silver Ore Tunnel we are in crevice matter, and before another 24 hours we hope to cable you we have cut the lode. In the cable of the 12th inst. he states that the heading of the Silver Ore Tunnel is in country rock. The east drift referred to is on the lode 600 ft. in which was barren where cut through.

CAPE COPPER.—The Nabapeep mine report for November, and the bi-monthly letter from the mine agents on the progress at Ookiep and Spectakel are received, and continue satisfactory. At Ookiep the 80, east of No. 24 winze, has improved to 6 tons. Return from Nababeep for November 25 tons; assay not yet received. Bills of lading received 580 tons of ore per Ocean King; put forward for sale by public tender 500 tons on the 1st proximo. Arrival at Swansea, the Lynwood.

PESTARENA UNITED (Gold).—Dec. 17: District Val Toppa: In the end driving south, on the western lode, in No. 1 level, we have a slight improvement. In the end of the intermediate drive south, under No. 2 level, the lode continues to yield 10 tons of ore per fathom, worth 6 dwts. of gold per ton. In the end south of first cross cut, on the supposed line of the great quartz lode, we have a change, the lode yielding now 6 tons of ore per fathom, worth 8 dwts. per ton. All other points not mentioned, including the stopes, are much the same as when reported on the 7th inst.—Establishment: The putting up of the launder to carry off slimes water from the works is progressing slowly.—District Pestarena: The walling in the old Beck shaft is finished, and all ironwork required for repairs to pipes has arrived at the mine. The pipes are now being repaired and put in their places without loss of time. Towards bringing timber and millstone we are getting on with all speed, with a good force of hands.

APPARATUS FOR CASTING METAL.—It is customary in the use of the moulds in which brass or copper or alloys of copper are poured in a molten state, in order to produce cylinders or other articles either hollow or solid, to cool them by the application of water, either by pouring it on the mould or placing the mould partly in water. As an improvement upon this Messrs. WALDENSTROM and SUMNER, of Manchester, propose to make the metal forming the mould hollow instead of being solid as hitherto, and through the chambers or cavities thus made in the substance of the mould they cause water to circulate, and thus produce the cooling effect. In the present method of casting brass cylinders from which tubes are made much time and labour are expended in moving the mould for the purpose of cooling, preparing it for a fresh casting, and replacing it into a suitable position to receive the molten metal, but the improved system of cooling prevents this, the moulds are rendered more durable, and better work is produced. By turning steam or warm water into the cavities in the substance of the mould they are enabled to warm the mould before commencing work, so as to get it quickly to a suitable temperature to produce a good casting.

TO THE METAL TRADE.

FOR COPPER, TIN, LEAD, &c., apply to—
MESSRS. PELLY, BOYLE, AND CO.,
SWORN METAL BROKERS,
ALLHALLOWS CHAMBERS, LOMBARD STREET, LONDON.
(ESTABLISHED 1849.)

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, DEC. 27, 1878.

IRON.	£ s. d.	£ s. d
Pig, GMB, f.o.b., Clyde..	2 3 3-	2 3 4½
,, Scotch, all No. 1 ...	2 4 0-	3 5 0
Bars, Welsh, f.o.b. Wales	4 17 6-	5 0 0
,, ,, in London.	5 7 6-	5 12 6
,, Stafford., ,, .	6 10 0-	7 0 0
,, in Tyne or Tees ...	5 5 0-	5 10 0
,, Swedish, London ..	8 15 0-	9 0 0
Rails, Welsh, at works..	4 15 0-	—
Sheets, Staff., in London	7 15 0-	8 5 0
Plates, ship., in London	6 12 6-	—
Hoops, Staff.	6 15 0-	7 10 0
Nail rods, Staff. in Lon.	5 15 0-	6 10 0
STEEL.		
English, spring 13	10 0-	19 0 0
,, cast 30	0 0-	40 0 0
Swedish, keg.....14	0 0-	—
,, fag. ham. 15	0 0-	—
LEAD.		
English, pig, common...14	12 6-	—
,, ,, L.B.....14	17 6-	15 0 0
,, ,, W.B. 16	0 0-	—
,, sheet and bar..15	10 0-	—
,, pipe.....16	0 0-	—
,, red 18	0 0-	18 10 0
,, white 24	0 0-	26 0 0
,, patent shot ...19	0 0-	—
Spanish.....14	10 0-	—
NICKEL.		
Metal, per cwt. 18	0 0-	20 0 0
Ore, 10 per cent. per ton.24	0 0-	26 0 0
QUICKSILVER.		
Flasks of 75 lbs., ware..	6 7 6-	—
SPELTER.		
Silesian	16 10 0-	16 15 0
English, Swansea	17 0 0-	17 10 0
Sheet zinc	20 10 0-	—

TIN.	£ s. d.	£ s. d
English, ingot, f.o.b...	65 0 0-	66 0 0
,, bars ,, ...	66 0 0-	67 0 0
,, refined.....	69 0 0-	—
Australian	61 0 0-	—
Banca ..... (nom.)	64 0 0-	65 0 0
Straits	61 0 0-	—
COPPER,		
Tough cake and ingot.	63 0 0-	—
Best selected	64 0 0-	—
Sheets and sheathing.	67 0 0-	67 10 0
Flat Bottoms	70 0 0-	71 0 0
Wallaroo	67 10 0-	68 0 0
Burra, or P.C.O.	65 0 0-	65 10 0
Other brands	62 0 0-	64 0 0
Chili bars, g.o.b.....	57 10 0-	—
PHOSPHOR BRONZE.		
Bearing metal	£105 0	0
Other alloys	£110 0 0-	125 0 0
BRASS.		
Wire	7 d.-	7½d.
Tubes.....	7¼ -	7½
Sheets	8 -	8¼
Yel. met. sheath. & sheets.	5½ -	5¾
Nails composition.....	8 -	8½

TIN-PLATES.*	per box.	
Charcoal, 1st quality ...	1 1 6-	1 2 0
,, 2nd quality ...	1 0 0-	1 1 0
Coke, 1st quality	0 16 0-	0 16 6
,, 2nd quality	0 15 0-	0 16 0
Black .....per ton	16 0 0-	16 10 0
Canada, Staff. or Gla., at Liverpool	11 0 0-	12 0 0
Black Taggers, 450 of 14 × 10	30 0 0-	—

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; IX 6s. per box more than IC quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The short time that has been devoted to business this week has not led to any material changes, or altered the position of metals to any perceptible extent, the general disposition being to do as little as possible, and not to incur fresh risks this year. Christmas is more a time of pleasure than of work, and notwithstanding the inclemency of the weather, inflicting hardships and privations upon many people, yet there are no holidays more closely observed throughout the country than these at this particular season. Indeed, it almost seems out of place even to refer to business matters, and it certainly is perfectly useless to seek after fresh business, nevertheless old orders must be proceeded with and former occupations resumed. No one can anticipate more than a scanty report with only half time to accomplish a full week's work, but although our markets for the most part continue inactive, yet there are indications of improvement in some metals which will, we hope, in a little time be turned to profitable account. This year having in every respect proved a very bad year there is a much better chance on that score alone of a considerable revival of trade after the opening of the New Year, and we trust there will be no loss of time in making every effort to re-establish commerce upon something approaching its former footing, and if every one will only faithfully perform their part, confidence no doubt will be quickly restored.

Adversity has already done its worst, but its injurious effects cannot be easily effaced, and the recovery will probably be comparatively slow and gradual. The present year has disappointed so many persons that they scarcely like to be hopeful, but we do not think it too venturesome to look forward to better times after such a very protracted depression. Our markets have sustained such a succession of hard hits of one kind and another that there surely cannot be many more to follow, and it is to be hoped that the evils which have overtaken us in the year 1878 will not extend to its successor, but that in place of war, famines, and adversity there may prevail pence, plenty, and prosperity. The current prices of metals afford little or no profit to producers, nevertheless low prices just now are the greatest security, and likely to prove extremely serviceable in the regulation of future business. They not only forbid expectations being formed of further reductions, but will stimulate consumption, and exercise a healthy influence upon production. We trust that all troubles and losses will end with the old year, and that the year 1879, from beginning to end, will be one continued run of good fortune to all connected with the metal trade.

COPPER.—The market has been steadier for Chili bars, and slightly higher prices obtainable. There will undoubtedly be a considerable improvement in the statistical position at the end of the month, and this will be a feature of the utmost importance, and one well calculated to inspire confidence at the commencement of the New Year. Old ideas must now in some measure give way to new ones, and it must not be thought that because the last two charters have been light that there will follow heavy charters. Edward's stock has swelled up the returns hitherto, but those shipments are probably completed, and consequently there should be, and most likely will be, greatly diminished supplies from Chili during the ensuing year. Light charters are desirable for the permanent relief and benefit of the market, and the unprecedentedly low prices must render mining extremely unprofitable. The patience of holders deserve to be rewarded, for they have had to bear a heavy burden in the shape of enormous stocks for a long time past, but the future of the market depends upon importers, and they should discourage excessive supplies. Consumers never had a better opportunity of getting cheaply into stock, and they should on no account miss it, for at present prices copper will pay very well to hold, and investors may safely invest their surplus capital, and obtain a handsome return for their money. Manufactured does not show any signs of improvement at present, which is chiefly owing to the bad Indian Exchange.

IRON.—Orders for all descriptions of iron are of the most limited character, and so few enquiries for this metal had, perhaps, never been known before; sellers are obliged to be continually submitting to concessions in order to secure work for their mills; but, according to the accounts from the various iron districts, the whole state of the trade seems to be in a most deplorable condition. The complaints are general, for they are not confined to the Midland Counties, but extend to the East Coast and to Wales, as well as to Scotland. It is a source of great uneasiness to the commercial and industrial classes to observe one of the principal sources of wealth to the country in such a low and perishing condition. All are suffering from the severity of the times, and those whose livings and incomes are dependent upon the iron trade must feel the pressure most acutely. The present privations and losses may not be without a salutary lesson, and may hereafter teach men the necessity of working harmoniously together and to mutual advantage.

The demoralisation which existed in 1872-4 has been the curse of the trade, for it has been declining ever since. The inflation of that period has in great part tended to bring about the present distress, but are the masters and men so thoroughly sensible of their errors that they would not do the like again? We doubt it, for no settled plans or arrangements have been made that would hold together for any length of time, and foreign competitors continue to carry off a large proportion of work that ought to be secured for England; and until the prices of English iron are reduced to the same level or below that of the foreign houses we shall only drag on a miserable existence. The main object of sellers ought to be to reduce prices so as to defeat foreign competition. It is not that buyers complain of English prices, but simply that they can buy cheaper elsewhere. The quotations for English iron are reasonable enough, but that is not the question, and as long as other sellers are found who are willing to supply equally good quality at a cheaper rate it is not likely that buyers will show their preference by ordering English iron.

TIN.—The market has been easier, and rather lower prices were accepted, but the prospects of the market are decidedly improving. The advices from Australia are of a most encouraging character, and there is no reason to doubt their truthfulness. The Sydney Morning Herald of Oct. 28 states that "tin ore has been very scarce, nearly all the mines having stopped work in consequence of the low prices. A few lots which were in the market changed hands this week on private terms, and the only cargo of produce cleared for London has been that of the Nineveh, having 3781 ingots of tin." The principal holders in our market possess such confidence in the future course of prices that they feel there is no necessity to attempt to control the market by any forced action. They can afford to wait until it rises on its own merits, and it is very certain that the recent favourable news received from Tasmania and Australia in regard to future supplies must ere long have a very important effect upon the market.

The stock of tin would form no great obstacle to a bold speculator as long as he could see that there would be a positive diminution in the supply; besides, the low price is a great incentive to speculation, for two or three times as much can now be bought for the same amount as formerly. It may be rather early yet for any general speculation, but as money becomes easier we fully anticipate a good deal of speculation in metals, and tin will be one of the first articles to receive attention. Consumers, therefore, should not hold back, for the upward movement may be more sudden than expected, and when once it takes a turn it may be rapid.

LEAD quiet, but tolerably steady.——SPELTER not much doing.

QUICKSILVER unchanged at 6*l.* 7s. 6d. There is a small trade doing.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday evening.—The Glasgow market for G.M.B. Scotch pig-iron has been steady this week. This morning business was done at 43s. 4d. and 43s. 3d. cash. This afternoon business at 43s. 5d. cash, closing sellers at this price, buyers about one penny less—a reduction this week of 2d. per ton. We quote makers' No. 1 Iron:—Gartsherrie, 49s. 6d.; Coltness, 51s.; Calder, 50s. 6d.; Langloan, 51s. 6d.; Summerlee, 48s. 6d.; Monkland, 44s. 6d., f.o.b. Glasgow; Glengarnock, 48s.; Eglinton, 43s. 6d., f.o.b. Ardrossan; Shotts, 51s. 6d., f.o.b. Leith. The Ironmasters' Quarterly Meeting is fixed for Tuesday, Jan. 9, at the Birmingham Exchange. The Quarterly Meeting at Wolverhampton is to be held on the 8th, in the Exchange of that town. There will be no official change of price declared in marked bars at either these quarterly meetings. It is of importance that ironmasters should know that the highest weight which can be stamped, under the new Weights and Measures Act, is 56lbs.; the old 112lb. weights, after this year, will be useless; new 56lbs. must be made to take their place without delay. The deliveries of Staffordshire and Yorkshire iron in the Thames have been considerably less this week than during any other week for the last seven years; this is mainly due to the stoppage of the canals by the frost; also flat trade and the Christmas week greatly diminishes production at the works. Very little work has been done at the manufactories this week, most of the concerns being idle for the men to enjoy the Christmas.

The meeting on the Birmingham Exchange on Thursday was a blank; very few attended, and no business was done. We have scarcely any business to report in our market this week, Christmas festivities having superseded what little trade there was; the raw material continues to fall in Middlesborough; the price now is 34s. 6d. for No. 4 forge, less 1 per cent., and some merchants are offering to undersell the makers even at this quotation. A fair business has been done this week on the Glasgow Exchange at late rates; the Middlesborough and Glasgow smelters are now engaged in a fierce competition for the trade of the raw material consumed by the Scotch manufacturers. We have no improvement to report in any department of the trade, nor is this expected before the close of the year. Metals are flat—tin, Straits and Australian, 60*l.* 10s. to 61*l.*

THE COPPER TRADE.

During the quarter ending Dec. 25 the quantity of copper ore, the produce of Cornwall and Devonshire, sold at the Cornish Ticketing, was 12,052 tons, which contained 866 tons 17 cwts. fine copper, and realised 41,459*l.* 8s. 6d., being equal to an average of 3*l.* 8s. 10d. per ton of ore, and 47*l.* 16s. 6d. per ton of copper in the ore. During same period the British, colonial, and foreign ores sold at Swansea amounted to 4808 tons, which contained 512 tons 12 cwts. of fine copper, and realised 26,721*l.* 10s., being equal to an average of 5*l.* 11s. per ton of ore, and 52*l.* 2s. 6d. per ton of copper in the ore. The average produce of the ore sold at Cornwall Ticketings was 7 3-16 per cent., whilst that sold at Swansea gave an average produce of 10⅝ per cent. From this it will be seen that the aggregate sales by ticket were 16,860 tons of ore, containing 1379 tons 9 cwts. of fine copper, and realising 68,180*l.* 18s. 6d. The subjoined is a summary of the periodical sales at the Cornwall and Swansea Ticketings respectively. The ores sold at the Cornwall Ticketings were—

Date.	Standard.	Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Oct. 3...	£ 85 15 0	7⅛...	£3 13 6...	9s. 9½d.	1675	125t. 6c..	£ 6,139 8 6
17...	86 19 0	6¾...	3 4 6...	9 5	2080	142 17	6,703 8 6
31...	93 18 0	7⅝...	3 12 6...	9 6¼	1378	104 15	5,000 1 6
Nov. 21...	84 14 0	7⅜...	3 14 0...	9 8½	2933	223 12	10,870 1 0
Dec. 5...	86 4 0	7½...	3 13 6...	9 10½	1617	120 8	5,934 8 0
19...	88 17 0	6¾...	2 17 6...	9 1	2369	149 19	6,812 1 0
Total for the quarter					12,052	866 17	£41,459 8 6
Quarter ending September, 1878					11,463	804 8	39,397 11 6
Quarter ending June, 1878					11,746	859 9	41,992 12 0
Quarter ending March, 1878					12,330	805 18	45,407 12 6
Total for the year, 1878					47,591	3336 12	£168,257 4 6
Showing a quarterly average of					11,898	834 3	42,064 6 1
Corresponding quarter December, 1877.					13,260	920 3	46,619 18 0
Total for the year 1877					53,791	3715 18	£213,336 7 6

The ores sold at the Swansea Ticketings were—

Date.	Standard.	Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Oct. 8.	£76 8 6...	8½ ...	£4 6 9...	10s. 2d....	1090	93t. 0c.	...£ 4,730 6 6
29.	74 17 6...	11 15-16	6 3 0...	10 4	1802	215 1	... 11,085 12 0
Dec. 10.	77 11 0...	10⅝ ...	5 13 10...	10 8	1916	204 11	... 10,905 11 6
Total for the quarter					4,808	512 12	...£26,721 10 0
Quarter ending September, 1878					8,600	702 18	... 35,166 5 6
Quarter ending June, 1878					9,185	777 6	... 41,755 14 6
Quarter ending March, 1878					13,076	958 2	... 56,469 10 6
Total for the year 1878					35,669	2950 18	.£160,113 0 6
Showing a quarterly average of					8,917	737 15	... 40,028 5 1
Corresponding quarter, Dec., 1877					10,236	724 3	... 40,767 11 0
Total for the year 1877					49,416	6286 4	... 408,031 9 6

THE SCOTCH IRON TRADE.

The Iron Trade has again passed through a profitless and dreary period of depression, unrelieved by a single cheering transaction. The political world has been troubled with wars and rumours of war; while the commercial has been afflicted with unparalleled financial irregularities, colossial failures, and unyielding strikes. Consequently, the year closes gloomily enough, and projects its dark shadow into the future. Still "after darkness cometh dawn."

The history of the Scotch iron trade, notwithstanding its occasional depressions, has been one of continued progress; and, considering that it has only been of about 120 years duration, has proved a mine of wealth to the country.

The price of iron during the year has ranged between 52s. and 42s. 2d.—the highest having been paid on Feb. 4, and the lowest on Nov. 26—the average of the year being 48s. 5d., the rates fluctuating according to the varying circumstances and varying influences operating on the market.

According to the ironmasters' returns the production of pig-iron in 1878 amounted to 902,000 tons, against 982,000 tons in 1877, being a decrease of 80,000 tons. While this is the case the stock has been increased 174,000 tons, and is now 679,000 tons.

The exports foreign and coastwise, coupled with the home consumption, amount to an aggregate of 728,000 tons, showing a decrease of 112,000 tons.

Manufactured iron has been very depressed during the year, and bars are 10s. per ton lower; while iron and steel rails show a fall of about 20s. per ton.

The malleable ironworks, foundries, and shipbuilding yards on the Clyde have felt the effects of the universal depression of industrial energy and commercial enterprise; but we are glad to learn that there are hopes of an early revival in shipbuilding if the operatives do not interpose such terms as will render this impossible.

As the Scotch ironmasters have improved, or are improving, their furnaces and other means of cheapening their manufacture, we hope soon to see such a revival of the iron trade as will make it alike profitable to employer and employed.

St. Vincent-street, Glasgow, Dec. 26.

PIG IRON WORKS IN SCOTLAND.

Proprietors.	Works.	In blast.	Out.	Total.
Messrs. Wm. Baird and Co. ...	Gartsherrie	10	6	16
,, ditto ...	Eglinton	5	3	8
,, ditto ...	Lugar	3	1	4
,, ditto ...	Muirkirk	3	—	3
,, ditto ...	Portland	—	6	6
,, Merry & Cunninghame.	Glengarnock ...	3	6	9
,, ditto ...	Ardeer	2	3	5
,, ditto ...	Carnbroe	3	3	6
,, Coltness Iron Co.	Coltness	12	—	12
,, Dalmellington Iron Co..	Dalmellington..	3	5	8
,, Monkland Iron and Coal	Monkland	8	1	9
,, Robert Addie and Sons.	Langloan	7	1	8
,, Summerlee Iron Co. ...	Summerlee	5	3	8
,, James Dunlop and Co.	Clyde	4	2	6
,, Colin Dunlop and Co....	Quarter	3	2	5
,, Wm. Dixon (Limited)..	Govan	5	—	5
,, ditto ...	Calder	3	3	6
,, Shotts Iron Co.	Shotts	3	1	4
,, ditto ...	Castlehill	3	1	4
,, Wishaw Iron Co.	Wishaw	2	1	3
,, George Wilson and Co..	Kenniel.....	—	4	4
,, Lochgelly Iron Co.	Lochgelly.....	—	4	4
,, John Christie, Esq.	Lumphinnans...	—	2	2
,, Carron Iron Co.....	Carron	4	1	5
,, James Russel and Co....	Almond	1	2	3
,, Henry Cadell, Esq.	Bridgeness	—	2	2
Total		92	63	155

Owing to the Christmas holidays scarcely any business has been transacted in the MINING SHARE MARKET this week, and our quotations for shares are merely nominal.

TIN is without change, and tin shares flat. South Condurrow, 10 to 10½; at the meeting next week a dividend of 10s. per share is expected. The mine has just been specially reported upon, and the inspecting agent considers that more ore is being discovered than taken, even to make up the dividends at the present low price of tin. South Frances, 6¼ to 7; at the meeting on Tuesday next a dividend of 5s. per share is expected, and but for the accident to the machinery, which appears to have been more serious in its consequences than at first anticipated, the dividend would probably have been 10s. per share. Carn Brea, 30 to 32; Cook's Kitchen, 1 to 1½; Dolcoath, 28 to 30; East Pool, 8¼ to 9; Penstruthal, 3s. to 5s.; Tincroft, 8 to 9; West Basset, 2½ to 3; West Frances, 3 to 3¼; Wheal Agar, 4 to 4¼; Wheal Grenville, 2 to 2½; Wheal Peevor, 6 to 6¼.

In COPPER we hear of no improvement, and business in shares is very restricted. Devon Consols, 1½ to 1¾; Marke Valley, 12s. 6d. to 15s. Parys Mountain, 6s. to 8s.; there is no change here in the 90 south. Mellanear, 4 to 4½; the sampling here is 579 tons of ore. Morfa Du, ⅞ to 1; West Seton, 8 to 9; West Tolgus, 38 to 40; Wheal Crebor, ¼ to ½.

LEAD MINES are dull, and prices nominal; there is a strong feeling, however, that the price of the metal will improve, and early in the coming year we may look for improved markets for shares. In the Welsh and Shropshire mines the frost has interfered with, and in some cases entirely stopped, all dressing operations, and the present thaw will be very welcome. Van, 17 to 18; no change here. Roman Gravels, 6⅜ to 6⅝.

Tankerville, 2½ to 3; East Van, 1⅞ to 2½; Glenroy, 10s. to 12s. 6d.; Great Laxey, 17½ to 18½; Leadhills, 2 to 2½; Mineral Corporation, 10 to 11. Pateley Bridge, 1 to 1½; there is a slight improvement in the Rake vein at the 30 fm. level. Rookhope Lead, 5s. to 10s.; South Roman Gravels, 2s. 6d. to 5s; West Chiverton, 1½ to 1¾; Aberllyn, 10 to 11; D'Eresby Mountain, 30 to 40; Clementina, 1 to 1⅛; Caron, 2 to 2¼; Frongoch, 2½ to 3; Grogwinion, 2 to 2½; Hartington Moor, 1½ to 2; Mawston, 50 to 55; Red Rock, 2 to 2¼; West Wye Valley, 1¾ to 2¼; Wye Valley, 2 to 2¼; West Pateley Bridge, 1¾ to 2¼. Monydd Gorddu, 2¼ to 2⅜; the agent considers the last price received for their ore was below its real value. At 76 per cent. for lead at 2s. 8d. per unit, he calculated it worth 10*l.* 2s. 8d.; silver 16½ ozs. per ton of ore, 3*l.* 6s.: total value, 13*l.* 8s. 8d., whereas it only realised 10*l.* 12s. 6d. per ton. It is just possible that other mines are in the same position.

FOREIGN MINES.—Cape Copper, 29 to 30; Colorado, 1⅜ to 1½; Chontales, 10s. to 12s. 6d.; Blue Tent, 2¾ to 3; Placerville, 2¼ to 2⅜; Don Pedro del Rey, 7s. 6d. to 10s.; Eberhardt and Aurora, 3 to 3¼; Frontino and Bolivia, 1¾ to 2; New Zealand Kapanga, 7s. 6d. to 12s. 6d.; New Quebrada, 1⅜ to 1⅝; Richmond, 10¾ to 11¼; St. John del Rey, 270 to 280; Santa Barbara, 37s. 6d. to 42s. 6d.; Hultafall, 3 to 3½.

The Market for Mine Shares on the Stock Exchange really presents little to comment upon, for on Monday and Tuesday the dealers were preparing for the holidays, on Wednesday and Thursday the Exchange was closed, and to-day a great many are still absent from business; the feeling, however, amongst the few who are met with is decidedly better, and although few purchasers are to be found, sellers show no disposition to offer at lower quotations. This is the more satisfactory, considering that the prices of metalliferous minerals are extremely low; indeed, the price of copper ore—less than 9s. 1d. per unit for 6⅜ per cent. ore—is lower than at any previous time, whilst tin and lead are almost equally depressed. But the prospects are by no means discouraging, for the price of necessaries and all else has gone down with wages, so that if the workmen could be kept fully employed at the rates now paid—that is for six full days a week instead of half time, as is too often the case at present—they would be as well off as during the prosperous period five or six years ago, whilst the change may once more give Great Britain the command of foreign markets, from which her high wages rate has lately excluded her; this alone should suffice to encourage capitalists to lend their assistance to industrial enterprise.

New Zealand Kapanga, ⅜ to ⅝; the annual meeting was held today, and full particulars will be found in another column. "The quartz obtained is exceptionally rich, and there would seem to be no doubt as to the ultimate result if the mine was more developed."

The summary of the New Zealand gold returns from October 13 to November 8, shows that 52 companies crushed 3167 tons of stone, which yielded 4700 ounces of gold, which is equal to an average of 1½ ounces of gold to the ton of stone, which would would pay very well. The most attractive concern is the Queen of Beauty, where in the low level the lode is looking extremely well, and is yielding large quantities of first-class crushing dirt, which is shaping well at the battery. The tributers (Landers and party), who are working a block in the Queen of May, crushed 15 loads of quartz at Bull's battery, for the yield of 14 ozs. 6 dwts. gold. Mining generally is still very dull, but the Queen of Beauty gives great encouragement, as the results there obtained tend to prove the permanence of the auriferous deposits in depth. The present depth is 550 ft., and it is stated that the appearances there afford indication of a considerable improvement in the quality of the stone at greater depths. The expenses of pumping are, however, considerable, and it time some steps were taken to relieve the smaller drainage works by throwing all the water into one, and lifting it by means of the big pump. At present two associations are required where only one should exist, and the continuance of certain driving in the direction of the Waio-Karaka district would effectually bring about the object referred to, and economise drainage expenditure to a very great extent. The main pumping works must cease early next year, unless an effort is made to reform the association upon a more permanent footing. The county authorities hold certain securities over which there is a lieu of 60,000*l.*, and it is proposed to place these securities on the market in order to raise a company and work the deep levels after sinking much deeper than hitherto.

The Karaka-Tararu tunnel scheme was considered at a large local meeting of those interested, when the Chairman (his Worship the Mayor) stated that the scheme of a tunnel from the Karaka Creek to the Tararu Creek seemed most promising, as the reefs it was expected to cut had already afforded proofs of their auriferous nature on the surface, and it might reasonably be hoped that the precious metal would be found at a deeper level. The best energies of the people should be directed to test the auriferous resources of the district, and in no manner could it be done so well as by the present scheme. Mr. Otto read a copy of the application sent to the Government re the matter, and the favourable reply thereto. He stated that they had obtained the right to a piece of ground two miles long and half a mile wide. They proposed to form a company with 20,000 contributing scrip at 2*l.* per scrip, and 20,000 paid-up scrip of 1*l.* per scrip, representing a capital of 60,000*l.* Only 20,000 were to be floated at first, and the remainder put on the market as the work proceeded. He knew the position of the ground, and spoke of its well-known value. He considered the Government had acted very liberally in the matter. Any existing rights would be respected, but if the ground was not worked it would fall into the hands of the Association. It is considered that the project will prove of great advantage to the field.

The Nouveau Monde Mining Company is said to have received an astounding report from its general manager in Venezuela, in a letter dated No. 14:—"Recently some great discoveries have been made in the auriferous districts. Placers have been met with so rich that they have found upon the surface, and at a depth of only 1 to 2 metres

massive nuggets weighing 15, 20, and 30 ozs. The other day I myself bought one weighing 11½ ozs. This discovery of gold has been made at six leagues from El Dorado concession. All the indications go to prove that similar riches will be met with not only in El Dorado concession itself, but throughout the country; it is not a question of a league or two, but of 100 or 200 leagues. Exploratory works are progressing satisfactorily. Rich capitalists are negociating to buy the Callao Mines for 19,000,000 frs.

St. John del Rey, 275 to 285; the telegrams received from Morro Velho during the week are dated Rio de Janeiro December 21 and December 23 respectively. They state the profit for November was 5100*l.*, and the produce for the first division—11 days—of December 12,000 oits., of the value of 4650*l.*, the ley of the ore being 6·3 oits. per ton. Don Pedro North del Rey, ⅜ to ½; the mine captain's letter dated November 24 shows that the operations are progressing slowly as usual. The machinery appears to be in a very patched up condition, some parts being tied together with rope. A storm on November 20 caused much damage, which all available force have been put to repair.

Almada and Tirito, 1s. to 3s.; the directors have received a telegram from Mr. Clemes stating that on Dec. 7 they remitted $1000 worth of ores and $4500 worth of bullion. The question of the relative rights of shareholders and of debenture-holders in cases where only a portion of debenture capital created is subscribed for, which was raised in last week's Journal, is exciting much interest. A debenture-holder suggests that the litigation, which he thinks otherwise inevitable, may be avoided by reconstituting on a basis which he mentions. Mr. Morgan's views on the subject are not yet forthcoming, but until they are published capitalists would probably do well to be cautious with regard to both shares and debentures. It certainly seems marvellous that two practical mine managers should court their dismissal by virtually declaring the property worthless if there be still fair speculative prospects. Another circumstance which requires elucidation is that the first completely condemnatory report was followed by a supplementary report less condemnatory. Was there any communication, by telegraph or otherwise, between the executive and the mine managers after the first report was sent home?

Richmond, 10⅞ to 11¼; the usual weekly telegram from the mine at Eureka states that the six days' run with two furnaces gave $36,000 from 620 tons of ore. The report of the manager, Dec. 4, states that there is no change of importance in any of the workings since previous report. The prospects, however, of the mine holding in depth are very encouraging. The 1000 ft. level has been drifted 16 ft. on the fissure, and now shows more broken ground than it has for some time, which is a favourable indication for ore.

An important improvement is reported at the Idaho Quartz Mine, Grass Valley, Nevada County, California. This is encouraging, considering that the mine has already paid 111 monthly dividends, amounting together to $2,510,750. With regard to Colorado, it is stated that the new town of Silver Cliff, in Custer county, claims a population of over 1000, and is shipping considerable ore to Canon, Pueblo, and to Hill's Works, near Denver. The Maine Mine, near Rosita, is again getting into a producing condition. At Caribou, in Boulder county, the Native Silver and Caribou Mines are turning out as well as usual, and are paying remarkably well. Near Idaho Springs, more lode mining is being done than ever before. The Mayflower and Lafayette Mines, owned in New York City, are being developed steadily, and shows ore in all the shafts, as well as in the tunnel. Rich strikes were lately made on both veins, and the production will be large and regular as soon as the requisite developments are effected. The last body of ore opened mills 217 ozs. silver. The Hukill is shipping ore in fair quantities, but needs greater concentrating facilities in its mill.

Lead Mine shares are altogether neglected, and it is quite impracticable to effect sales except at a very large reduction upon nominal quotations, although there is a very general feeling that lead has reached its lowest price, and that a speedy improvement may be confidently looked for. Van, 17 to 18; there is no change to report from the mine. The break in the weather has allowed all surface operations to be carried on as usual.

Mineral Corporation of Great Britain, 10 to 11; the agent reports that there is no change at the Hafna Mine, which continues to look well. At Great D'Eresby the deep adit in the valley has been commenced, and will be pushed on with all speed. The unusually severe weather has of course put a stop to all surface operations, but as there is now an improvement it is not anticipated that there will be much further delay.

Pateley Bridge, 1 to 1⅛; The 30 east, on Rake vein, has slightly improved. Other parts remain unchanged. Surface operations are somewhat hindered by the frost, which has been very severe.

Subjoined are the closing quotations:—

Assheton, ¼ to ½; Devon Great Consols, 1¼ to 1¼; East Caradon, ⅛ to ⅜; Glenroy, ⅜ to ⅝; Great Laxey, 17 to 18; Leadhills, 1⅞ to 2⅛; Marke Valley, ⅝ to ⅞; Parys Mountain, 5-16ths to 7-16ths; Pateley Bridge, 1 to 1⅛; Roman Gravels, 6¼ to 6¾; Tankerville, 2½ to 3; Tincroft, 7 to 9; Van, 17 to 18; West Chiverton, 1 to 1⅛; West Pateley Bridge, 1¾ to 2¼; Wheal Grenville, 2 to 3; Almada and Tirito, 1-16ths to 3-16ths; Birdseye Creek, ½ to ¾; Blue Tent, 2¾ to 3; Cape Copper, 29 to 31; Cedar Creek, 1s. to 3s.; Chontales, 7-16ths to 9-16ths; Colorado United, 1⅜ to 1⅝; Don Pedro, 5-16ths to 7 16ths; Eberhardt and Aurora, 3⅛ to 3⅜; Exchequer, ¼ to ⅜; Flagstaff, ½ to ¾; Frontino and Bolivia, 1¾ to 2; Hultafall, 3 to 3⅛; Javali, ¼ to ⅜; Kapauga, ½ to ⅝; Last Chance, ½ to ¾; New Quebrada, 1⅜ to 1⅝; Placerville, 2⅛ to 2¾; Plumas Eureka, 1⅝ to 1⅞; Richmond Consolidated, 10⅞ to 11⅜; St. John del Rey, 270 to 280; Sierra Buttes, 1⅝ to 1⅞; South Aurora, ⅛ to ¼; United Mexican, 2¾ to 3¼.

COLLIERIES.—The Christmas holidays have frightened away all thoughts of businsss, and consequently we have no changes to report in colliery shares. Dealings will no doubt be resumed next week, and as it is generally believed that the coal trade will improve very much during the coming year good colliery shares should be bought. In south Wales so firm is the belief in better times being at hand that (it is stated) one firm alone have just spent half a million of money in carrying on a colliery enterprise where coal will certainly be but has not yet been found. In Lancashire trade is better. Chapel House is finding a ready market for its increased output. The shares of this company are steady at 3 to 3½. Yniscedwyn, Cardiff and Swansea, Newport Abercarne, &c., remain quiet at last week's prices.

MESSRS. PIXLEY and ABELL—GOLD: Although a withdrawal of German gold coin to the extent of 260,000*l.* has taken place since our last, it has been quite exceptional, and there exists no general demand for export, consequently no less than 1,702,000*l.*, consisting of coin and bars from France, and sovereigns and bars from Australia, have been sent into the Bank; further amounts will follow during the week. We have received 652,100*l.* from Australia and India; 8500*l.* from River Plate = 660,600*l.*—SILVER: The market being quite bare of supplies, a slight recovery has taken place in the price, and we quote 49½d. to 49⅝d. as the rate of to-day; there has not been the slighest demand for the East, and the steamer leaving to day takes nothing for India: the only orders during the week have been on continental account. We have no arrivals to report since our last.—MEXICAN DOLLARS: A serious fall has occurred in this description of coin. The amounts which have been on the market for same days from the French and American steamers could only be placed at 48¾d. per oz., showing a reduction of ⅝d. per oz. from the rate obtained on the 16th inst.

STEEL RAILS.—The following figures show the exports of ste rails during the months named, also their values:—

	Tons.	Value.	Average per ton.
Nov., 1876 ...	19,147	£172,514	£8 8 0
„ 1877 ...	18,410	148,690	8 0 0
„ 1878 ...	18,785	126,940	6 9 0

WHEAL SISTERS.—The Lelant district has been celebrated for its rich and lasting as well as profitable tin mines. St. Ives Consols, Providence, Wheal Margaret, Wheal Mary, and several others have yielded immense profits to their proprietors. At the present time Wheal Mary, Wheal Margaret, Kitty, and Trencwm are united under the name of Wheal Sisters. The returns of tin are about 50 tons per month, and increasing. At 40*l.* per ton for black tin profits would be realised. The plant on the mines is complete, comprising more machinery than is required to fully develope this most extensive property. In the Wheal Mary part a continuous course of tin (100 fms.) has been laid open, which will be taken away at 6s. in 1*l.* The returns are gradually increasing under the energetic management of Capt. Rosewarne. The Trencwm part of the mine is yielding over 20 tons of tin monthly. The mines are all but free from debt. The proprietory consists of Messrs. Bolitho, Mitchell, Field, and Harveys of Hayle. A guarantee of the soundness of the position financially, and resources in the property second to none. As an investment the shares are certain, with an improving metal market, to become very valuable and rise rapidly in price. The mine is in 1000 shares, and the shares 8*l.* to 10*l.* each.

ST. JUST AMALGAMATED.—This mine has been worked quietly by a few local gentlemen identified with Wheal Owles, North Levant, and other mines. About a year ago the pumping engine, with boiler, and a quantity of pitwork were bought at an exceedingly low price, with a view to an energetic working of the bottom of the mine. For months before the suspension of the mine 12 men raised 8 tons of tin per month under the most disadvantageous circumstances. The mine is situate on the edge of the cliffs, some of the levels extending seaward, as at Levant, Botallack, Wheal Owles, where the lodes have been so rich in tin and copper, following the junctions of killas and granite. Considerable quantities of tin have been raised above the adit level. The shareholders consist of men of local influence and practical knowledge. At the present time the shares are but 200 in number, but it is intended to multiply them by 10, making them 2000. It is estimated that but a small amount of capital will fork the water, and see the mine to the bottom. An early meeting will be held on the mine with a view to initiating a speedy development.

BRITISH SILVER-LEAD MINES.—The agent writes—"It is a splendid sight to see the bottom of the eastern stope and the large rocks of ore on surface from it, and the deeper we go the greater the improvement in quality, its present value being 2 tons of silver-lead ore and 1 ton of rich blende per fathom. Dressing has been interrupted in consequence of the severe frost and deep snow, or a parcel of ore would have been ready for sale."

NORTH HENDRE (Lead).—The warrants for the dividend of 10 per cent.—making 40 per cent. for the year—declared at the recent annual meeting, will be sent out on Dec. 31. This mine continues very rich for ore, and we are pleased to learn that the average monthly sales of 150 tons for 1878 are likely to be materially increased for 1879.

RUSSIAN (VYKSOUNSKY) IRONWORKS COMPANY.—The report of the directors for the year ending July 12 last states that the capital stock remained at 52,700*l.*, but the amount of debentures issued had increased to 10,474*l.* Notwithstanding the depression of the iron trade during the year a small profit had been realised, but they regretted that the result was not sufficiently favourable to justify the declaration of a dividend. The item "workmen and peasants and for ground rent" had increased to 10,604*l.*, against which a reserve had been provided of 2280*l.* They feared that a considerable further amount of the peasants' rent would prove irrecoverable; but, if so, the lessors would bear three-fifths of the loss. They were about to avail themselves of the law enabling the Government to redeem this ground-rent. As the state of trade at the present time in Russia showed a decided change for the better, and the company found a readier market for their products and at more remunerative prices than at the corresponding period last year, they had credited this year's accounts with the 5 per cent. written off the stocks in hand last year. The Russian Government had very liberally extended the privilege of obtaining advances from the National Bank to an amount not exceeding 400,000 roubles on the security of the company's iron for another year, but, as there was a better market, they were not at present availing themselves to the full extent of this credit.

COAL TRADE IN NEW SOUTH WALES.—A letter from Sydney (Oct. 28) says—The coal trade has just cleared a crisis. For five years past an artificial price has been kept up by a combination among the principal colliery proprietors—a combination that was the sequal of a disastrous strike. But it has been alleged that the members of the combination wsre not all loyal to each other, and, in consequence of jealousy and dissatisfaction, notice was given that it should terminate at the end of the present year. The shares of the coal companies fell, and coal consumers began to rejoice, but the working miners were in a state of grave alarm, as they foresaw that competition among employers meant a reduction in price and profits, which, again, meant a reduction in wages. They threatened a strike, and brought all their influence to bear upon their masters. This, with other considerations, has induced a reconstruction of the masters' combination, so that now the price of coal will remain at or near the same rate, and the hewers, wages will remain untouched. They are paid at present 5s. a ton for putting into the skip, a rate which contrasts very favourably with what is paid in England. At the same time it has the disadvantage to the miner of attracting too many men to the district. Every coal mine is over-supplied with hands, and when high wages and half-work go together, the gain is nominal rather than real, while there is a loss to the community by keeping men on half-work.

*** With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence: Silver Mines, New South Wales (R. D. Adams); Australian Tin Mining (R. D. Adams); Our Future Tin Industries (S. L. Bensusan); Mining Companies' Debentures; Novel Electric Apparatus; Rock-Drilling Machinery; Rock-Boring Machinery (G. Cook); Devon Silver-Lead Mine (Wm. Salmon); The Tin Markets; Strikes (R. Symons); Cardiganshire Mines—Cwm Brwyno (A. Francis); Frontino and Bolivia Mining Company; The Wild Duck, or Sportsman's Arms—Patent Matters—Hathorn, Davey, and Co.'s Exhibits at the Paris Exhibition (*illustrated*)—Meetings of Almada and Tirito Consolidated Silver, Chicago, &c.

ECONOMIC ELECTRO-MOTOR.

In connection with the class of electro motors that employ both permanent and electro-magnets Messrs. D. WARD and A. BALL, of Berkshire, New York, have invented an improved combination, which consists of a series of adjustable permanent magnets, and a wheel carrying a series of electro-magnets, and a current changer that alternates the current without absolutely breaking it, so that the electro-magnets are first drawn toward the permanent magnets, and after passing the poles of the said permanent magnets are repelled, the current being changed at the proper instant. The object of the invention is to construct an electric motor in which the attractive and repellant force of the magnets are both utilised. All the working parts of the motor are contained in a frame composed of circular end pieces with cross bars supported upon legs, and rigidly connected together by tie bars. At the centre of the end cross bars are boxes, in which are journalled the ends of a shaft carrying one or more wheels, to the periphery of which a number of U-shaped electro-magnets are secured with their faces outward. These magnets, eight, or more or less, in number, are placed at equal distances around the periphery of the wheel. Alternate magnets are wound in opposite directions, so that positive and negative poles alternate in position on the periphery of the wheel, and all of the magnets are in one circuit, and are wound with the same continuous wire that runs from the current changer on the shaft to and around all of the magnet cores upon one side of the wheel, and crosses to the opposite side of the wheel, and is coiled around all of the magnet cores on that side, and is returned to the current changer.

The improved current changer consists of two insulated rings each having projections which are parallel with the shaft, and are inserted between the similar projections of the other, but the two rings and their projections are perfectly insulated from each other, and from the shaft and wheel. The number of projections on each ring corresponds to the number of magnets on the wheel. One of the rings is connected with one of the terminals of the magnet coils, and the other ring is connected with the other terminal and springs, which are secured to binding posts on the frame that are in communication with battery wires, bear upon opposite sides of the current changer so as to make contact with the projection thereof. As the wheel rotates the projections on the rings are alternately brought into contact with the springs, thereby shifting the current without absolutely breaking it, so that what was before the positive magnet pole, when the current is changed becomes the negative pole.

In the circular portion of the end pieces there are a number of holes for receiving the ends of bars, which correspond in number to the number of electro-magnets, and are arranged parallel with the shaft, and are placed at equal distances apart. Each bar is notched to receive a permanent U magnet, which is clamped to the bar by means of a short cross bar and screw.

The permanent magnets are arranged tangentially to the path of the face of the electro-magnets, and all face in the same direction around the periphery of the magnet wheel, and are provided with means for regulating the distance between their poles and the faces of the electro-magnets. The permanent magnets are of the compound type, one magnet being placed over the other, so that the side of the compound magnet presents the edges of all of the magnets of which it is composed to the influence of the electro-magnets on the wheel. The arrangement of the current changer is such that as the electro-magnets approach the permanent magnets their poles are unlike the poles of the permanent magnets, so that they are attracted, but immediately they pass the poles of the permanent magnets the current is changed, so that the force of repulsion takes the place of attraction, and the electro-magnets are driven forward by this force. It will thus be seen that both the attractive and repellant force of the magnets are utilised. To the tie bar, which is secured to the end pieces, are also attached magnets, which are supported immediately over the shaft, and are of sufficient strength nearly or quite to support the shaft and the wheel or wheels supported by it, and thus relieve the bearings of pressure and friction.

AUTOMATIC WEDGE SAFETY CAGE.

Althoug'i the number of contrivances for preventing the fall of the cage in the event of the breakage of the rope has been very large, there are still many pits which are unprovided with any safety apparatus, owing to their liability to get out of order and their complicated character. For several years past the automatic wedge safety cage, invented by Mr. H. A. Davis, of New Cross, has been in successful use as a warehouse lift, and it is now proposed to introduce it more generally as a safety cage for mines. The cage is caught upon a pair of wedges, which at the moment of danger become fixed on the guide rods immediately below the cage, The wedges with teeth are suspended independently of the lift rope or cage, by a cord connected to the balance weight used as a counterpoise to the cage. In the absence of this weight a drum is employed to receive the wedge cord. The wedges travel upon the guides with the cage, and are adjusted and remain always in the same relative position so long as all is going right; and in addition to the adjusted suspension the wedges are kept ready for use by their thin ends being introduced between the guides and the sides of the cage. When a breakage of the lift chain or rope occurs through some unforeseen defect, overloading or otherwise, the wedges immediately receive the cage, stopping it instantly in a gentle and easy manner, holding it in perfect safety. and thus preventing further damage.

Separate ropes being used for the cage and for the wedge it is most unlikely that both of these would break simultaneously, and to prevent the slipping of the wedge a small tooth kept forward by a spring is made to project beyond the face of the wedge, so that in the event of breakage the falling cage comes in contact with the tooth and embeds it in the guide rod before the cage comes full down upon it. The automatic wedge safety cage has been very highly spoken of by engineers and others who have examined it, and it is believed that it only requires to be known to colliery managers to secure its general adoption. It is claimed that it is not only self-acting, but requires no attention, and cannot get out of order, whilst the cost at which it can be attached to cages at present in use is so small that these is no excuse for neglecting to protect every cage in the kingdom.

NEW PUMP VALVE.—The improved valve invented by Mr. O. F. BERG, of Hamburg, consists of two or more discs of different diameter of best leather fastened together concentrically and under great pressure by means of an india-rubber solution. In the centre opening of the discs a metal box is fastened; one end of the box may be furnished with a flange, and the other end be partly bent over the leather, or it may be attached in any other suitable material. This box prevents the discs from bursting at the edge of the opening, and wear and tear will be diminished. The durability of these valves is greater than that of any other leather or india-rubber valve hitherto in use.

The creditors of the Copper, Lead, and Hematite Mining Company of Lanzi, Tuscany, are to send in their claims by Jan. 24; and those of the Association of Land Financiers by Feb. 15.

ZINC ORES.

ARMAND FALLIZE,
INGENIEUR-CIVIL, A LIEGE (BELGIUM),
BUYER
1.—CARBONATED AND OXYDED ZINC ORES (CALAMINE, &c.
2.—ZINC AND LEAD ORES MIXED TOGETHER, BUT DRESSABLE KINDS ONLY.

CAPPER PASS AND SON, BRISTOL
PURCHASERS OF
LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, HARD LEAD, BRASS SLAGS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE, containing LEAD, COPPER, TIN, or ANTIMONY.

GEO. G. BLACKWELL,
5, CHAPEL STREET, LIVERPOOL,
PURCHASER OF
MANGANESE, ARSENIC FLUOR-SPAR, WOLFRAM, BLENDE, CALAMINE, CARBONATE and SULPHATE OF BARYTES, ANTIMONY ORE, CHROME ORE, MAGNESITE, EMERY STONE, PUMICE STONP OCHRES AND UMBERS, CHINA CLAY, LEAD ORE FOR POTTERS TALC, PHOSPHATE OF LIME, &c.

LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Dec. 13	Park	10	£10 1 6	Walker, Parker, and Co.
18	Frongoch	60	9 0 6	Panther Lead Company.
	Glogfawr.....	60	10 11 0	ditto
	East Logylas	12	8 3 0	ditto
	East Darren	45	12 15 6	S. C. Goodhart and Co.
	Cwmystwith	40	9 1 0	Panther Lead Company.
23	Pandora	20	8 13 6	Walker, Parker, and Co.

COPPER ORES.

Sampled Dec. 4, and sold at the Royal Hotel, Truro, Dec. 19.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Devon Great Consols	106	£1 4 6	Marke Valley	60	£1 6 6
ditto	88	1 14 0	ditto	56	2 4 6
ditto	85	1 15 6	ditto	53	2 3 6
ditto	81	1 6 6	ditto	50	3 14 0
ditto	73	1 15 6	ditto	31	4 9 0
ditto	71	1 13 0	Hingston Down	81	2 0 6
ditto	66	4 13 6	ditto	74	1 17 6
ditto	65	4 10 0	ditto	53	2 3 6
ditto	64	1 8 0	Glasgow Caradon	70	3 19 6
ditto	44	1 10 6	ditto	67	4 4 6
ditto	39	1 8 0	ditto	63	3 10 6
South Caradon	80	4 5 6	Gawton	85	1 8 6
ditto	61	0 13 0	ditto	81	1 8 6
ditto	48	9 18 6	ditto	27	2 7 6
ditto	47	9 19 6	Wheal Crebor	50	1 13 6
ditto	43	3 5 0	ditto	46	1 17 6
ditto	42	3 14 0	Phœnix	45	3 5 0
ditto	41	5 3 0	ditto	43	6 9 0
ditto	40	2 15 6	Bedford United	60	3 13 6
Marke Valley	61	2 15 6	East Caradon	30	4 17 0

TOTAL PRODUCE.

Devon Great Con.	782	£1593 14 6	Gawton	193	£ 300 13 6
South Caradon ...	402	1944 3 6	Wheal Crebor	96	170 0 0
Marke Valley	311	811 12 0	Phœnix	88	423 12 0
Hingston Down ...	207	415 17 6	Bedford United ...	60	220 10 0
Glasgow Caradon .	200	783 8 0	East Caradon	30	145 10 0

Average standard ..... £ 88 17 0 | Average produce 6¾
Average price per ton..... £2 17 6
Quantity of ore ..... 2369 | Quantity of fine copper 149 tons 19 cwts.
Amount of money £6812 1 0
LAST SALE.—Average standard ..... £86 4 0 | Average produce..... 7⅛
Standard of corresponding sale last month, £ 84 14 0—Produce, 7⅝

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons.....	230½.....	£ 541 2 6
Grenfell and Sons.....	331¼	1039 1 10½
Nevill, Druce, and Co.....	220	315 16 3
Williams, Foster, and Co.....	923½	2934 12 7½
Mason and Elkington	274½	870 7 1½
Charles Lambert and Co.	290½.....	1109 0 7½
Total	2369	£6812 1 0

NO SALE on Thursday last, December 26.

Copper ores for sale at Tabb's Hotel, Redruth, on Thursday next—Mines and parcels.—Mellanear 579—East Pool 244—West Tolgus 222—West Seton 110—South Tolcarne 31—West Roskear 21—Wheal Agar 12,—Total, 1219 tons.

Notices to Correspondents.

*** Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *filed* on receipt; it then forms an accumulating useful work of reference.

"T. W. D." (Glasgow) in last week's Journal makes an enquiry which I am in a position to answer fully. A work of the description given is not in existence, but there is one in the publisher's hands, which will, perhaps, more than meet all the enquiries he enumerates. The work is a systematic and clear description of the principal metalliferous mines of the world, and for scientific accuracy and general completeness will, I think, leave little to be desired. I am able to speak the more accurately concerning it because during the last two years it has been my pleasant occupation to prepare the plans, sections, and other figures with which this and another preceding work, by the same author, are amply illustrated.—E. Henry Davies: *Ebnal Lodge, near Oswestry.*

Mining Literature—"M. M." (Pwllheli).—We do not recollect the title of the work, but it is published by Messrs. E. and F. N. Spon, of Charing Cross, who will supply the information as to price, time of issue, and so on.

Rolling Wheel—"Bicyclist" (Kingston).—Your enquiry is exactly answered by an explanation recently published in the Scientific American. Regarded merely as a rotating body, all parts of the periphery of the wheel will move round its axis with the same velocity; but regarded as a rolling body, the upper portion moves forward faster than the portion which touches the ground. Any point in the wheel describes a cycloid curve, as the wheel rolls on a plane surface.

Received,—"H. S. C." (Vermont)—"J. T." (New York)—"B. and P." (New York)—"Constant Reader" Northallerton)—"Shareholder" (Rookhope)—"M. T." (Leeds)—"Veritas": We cannot devote space for further discussion on this matter—"Caution" must caution those whom he wishes by other means than through the Journal; write to the parties direct—"R. W."—"Stannum": The facts have been often stated in the Journal—"W. T." (Ballydehob)—"Shareholder" (Wheal Crebor)—"E. J. J." (San Francisco, Dec. 6): Next week—"Copper" (New York)—"Shareholder" (North Hendre).

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, DECEMBER 28, 1878.

THE MINERS' CONFERENCE AT MANCHESTER.

After a discussion on various topics of interest to working miners the Conference of delegates belonging to the National Association was brought to a close on Saturday last, after occupying the usual orthodox six days. The object of the gathering, according to the programme, was to carry out certain resolutions to be proposed to be embodied in a Bill, or added to the existing Mines Regulation Act, to be brought forward in the ensuing session of Parliament. So far, however, as can be gathered from the speeches delivered the legislation desired is singularly one sided, and intended to still further hamper mineowners, and, as a necessary consequence, increase the cost of getting coal, where in one instance of the greatest importance to the safety of the miners whilst at work, but which would slightly affect their pockets, there was the strongest opposition, although the proposal was warmly advocated by Mr. Macdonald. This was a resolution to the effect "That the use of blasting powder or other dangerous explosive substances be entirely prohibited in every mine or part of a mine where any large quantity of gas is given off, or any accumulation of gases are known to exist, until the manager of the mine shall declare such mine or portion of a mine to be in a safe condition." There is no doubt that blasting more than anything else has been the cause of some of the most fearful colliery accidents on record. The Oaks Colliery explosion, with its sacrifice of 360 lives, according to Mr. Dickinson, the Government Inspector, was the result of blasting in a stone drift, whilst the more recent explosions in Scotland, Lancashire, and in South Wales all point to similar causes. The workmen know perfectly well that blasting in mines where gas is known to exist is always accompanied with danger, and Mr. Wardell, the Inspector for Yorkshire, informed us not so long since that the freedom from explosions in South Yorkshire he attributed to the workmen having declined to bring the coal down by blasting. But getting the coal by wedging instead of blasting involves a little sacrifice on the part of the workman, and this sacrifice, by which they obtain increased safety, very many of them are unwilling to make. This was shown by several delegates. One of them, Mr. Gillespie (Fife and Clackmannan) said that if blasting had caused nearly all the explosions in mines surely the law with regard to its practice should be made as stringent as possible. Still, admitting so much, he evidently did not see the necessity of doing away with blasting, and so render an explosion from such a cause impossible, for he moved that the words "large quantities of" and "any accumulation of gases" be omitted from the resolution. This was seconded by a delegate from West Cumberland, whilst another one from West Yorkshire made the somewhat astounding statement that the passing of the proposition would be a retrograde step, so that things would be worse than they were at present. Mr. Pickard, of West Yorkshire, took an entirely opposite view, and reminded the delegates that Mr. Cross, the Home Secretary, had told a deputation that it was the miners who were afraid of themselves, and that the miners should pass resolutions amongst themselves where blasting was carried on recommending that the practice should be discontinued. Mr. Cross, it appears, had further stated there was an impression abroad amongst mining inspectors that the men themselves would be the first to object to such a law as was proposed. This was fully borne out by the fact that Mr. Gillespie's amendment was carried despite the remark of Mr. Crawford that were blasting abolished all over the kingdom the increased cost of working would not exceed 1d. per ton. We have here a strong proof that the majority of miners will risk their lives for the sake of a very small sum indeed, and are opposed to the views of those philanthropic gentlemen who have long been endeavouring to better the position of the miners, and to ensure to them the greatest possible amount of safety while following their unpleasant employment. A motion was afterwards agreed to defining the responsible manager of a mine.

With respect to new mines a resolution of some importance was agreed to. It was to the effect that in all new mines there shall be drifts or headings driven in the mineral at necessary distances, and in sufficient time, in advance of the general workings, so as to drain off and exhaust the gases that are of a dangerous explosive character. This, of course, would involve a considerable outlay in the first instance, and, it may be said, is simply dictating to the engineer or manager how the working shall be carried on.

As might be expected, Mr. Macdonald introduced the question of compensation for injuries to workmen. He brought forward the usual arguments in favour of the masters being liable for every act of all the persons employed by him, so that compensation would have to be given to perhaps 50 persons for the recklessness or carelessness of any one of them. On many occasions we have shown the injustice of such a wild and visionary proposal, whilst admitting that where an employer could be proved guilty of any act by which a workman was injured that he should then be liable for compensation. Now Mr. Macdonald admits that explosions resulting from the use of blasting explosives are the principal causes of the many deaths that have occurred of late in collieries, and if his Bill passed he would no doubt endeavour to make the owners of the mines where such occurred in future responsible to the widows and children, whilst at the same time the majority of the delegates were actually in favour of blasting—the miners deadliest enemy. The men prefer running a great risk for the sake of obtaining a trifle more money for getting a ton of coal, whilst the owners, according to Mr. Macdonald, in the event of an accident, which is preventible on the part of the miners if they think well to adopt a certain course to be held responsible. However, there is no likelihood of such a proposal receiving the sanction of the Legislature, and we certainly must give Mr. Macdonald credit for his courage in again bringing it before the House of Commons after the unanswerable arguments previously brought forward against it, when its absurdity was so clearly demonstrated.

About one of the most singular proposals brought before the Conference was that brought forward by Mr. Craggs, of South Yorkshire. That it is highly necessary that some means should be adopted to prevent persons from becoming miners who have not first served an apprenticeship in the mine before attaining the age of 18 years. The idea of a boy being apprenticed to a miner is by no means a new one, but there appears to be about as much necessity for it as there is that a law should be passed that every person before being allowed to work as a "navvy" should serve a certain number of years as an apprentice to that scientific occupation. Sensibly enough, however, the question was remitted back to the various branches, but to come up for consideration at the next Conference. There was a trifle more force in the motion of Mr. Toyne, of Cleveland, that the Conference urge upon the Legislature to appoint a committee to look into the causes of the long and continued depression of trade with a view to a speedy remedy. It was not stated in what way Government could interfere so as to improve the trade of the country, and there is no doubt if Government had the power to do away with the existing depression but what it would be done at once. One of the delegates considered the depression was caused by the action of the present Government, but he did not say what the action alluded to was, whilst a Mr. Swaine took a more reasonable view. He said that always after periods of excitement there came periods of depression, and the present depression had come as a consequence of the period of inflation which was experienced a few years ago. The motion, however, was agreed to, although it is not likely that the Legislature would appoint a committee on a matter that will have to right itself, and even now there are not wanting signs of a revival in several of our most important industries.

Over-production, a popular theme with the miners' leaders, was brought forward, and a motion on the subject was proposed, having for its object the entering into negociations with the miners throughout the country for the purpose of trying to restrict the production of coal, so as to ensure a fair rate of interest to the colliery owner for the capital sunk, and a fair wage to the workman. With some modification the motion was agseed to. To say that to carry out such a proposition is impossible is all that may be said about such a resolution. The check weighman clause is one of considerable interest, and a motion that the workmen shall be able to appoint any person they please to act for them in that position was agreed to. At the present time the person acting for the men must be one who has worked in the colliery where he is to act as the men's weighman. The wages question was the last one brought before the Conference, when it was proposed—"That the meeting, regretting to see the still further downward tendency of wages, postpones the consideration of it until the next Conference." Thus has ended another Miners' Conference, which gives every evidence of being as barren of results as most of its predecessors. The gathering, no doubt, has been a pleasant one, more especially as the delegates have not been put to the trouble of paying their own expenses.

FOREIGN COMPETITION.

We are frequently told that there is no occasion for raising the bugbear of foreign competition, for our manufactures are so firmly established in most of the markets of the world that there is no probability of their being superseded by those of any other country. But this flattering view in favour of our own products is fast being dispelled by those who may well claim to be the highest authorities on the subject. This we pointed out in an article in last week's Journal on the necessity of higher scientific education for our engineers, when we gave extracts from the published opinions of Mr. Scott Russell, Mr. I. Lowthian Bell, and others, when we more particularly noticed a letter on the subject from Mr. G. F. Armstrong, Professor of Civil and Mechanical Engineering in the Yorkshire College of Science. That communication appears to have aroused several of the engineers of Leeds, who have disputed his premises with respect to tools of a certain description for which the town is noted, but the main features of his argument, that as regards accuracy of detail, and in other respects as well, we are in some descriptions of machinery behind several of our foreign competitors. Wheel-cutting machines, it appears, are required to be of great nicety, although they date back, we are told, more than a century ago, Burdley being credited as the person who first tried his hand at it. These machines are evidently of much greater importance than is usually attributed to them, for from their complexity Mr. Armstrong informs us in a letter to a contemporary that they have engaged the attention of some of the ablest mathematicians and others from the end of the 16th century up to the present time, amongst the investigators being Desargues, Camus, De-la-Hire, Romer, Euler, and our own Willis. Some of these complicated machines made abroad and exhibited, Mr. Armstrong says, are far more accurate, mathematically, than those made in England. This has been disputed by Mr. Wicstead and some others in the interest of our English tool-makers; but the professor maintains his first opinion, and draws attention to the machine of Sellers and Co., of Philadelphia, exhibited at the Vienna Exhibition. It cuts both spur and bevel wheels with the marvellously small play of 1-100th of the pitch, and according to the well-known Professor Reauleaux, of Berlin, it does it on a very near approximation to the true mechanical curve. Mr. Glover truly says that our tool makers and others should not only be satisfied themselves that their products are superior to all others, but that they should also prove it to the world. If they do not do this and meet all competitors wherever they may appear, then we are afraid that they will consider that they are not able to do so. Our machinists and engineers have evidently been too long resting on their oars, satisfied with the prestige they enjoyed some 30 or 40 years, whilst our continental and American neighbours have been hard at work trying to outstrip us in the race, and to some extent too they have decidedly succeeded.

But this knowledge we feel sure will only stimulate our young engineers and machinists to exert themselves in maintaining the position that England has held as the home and originator of all those scientific appliances which are now scattered over the world, and, it may be, in some cases improved upon. But foreign competition is a great fact that it is useless as well as foolish to ignore with the many proofs we have of it before us. Only a few weeks since Sir W. Armstrong, addressing the Association of Foremen Engineers at Newcastle, said—"Depend upon it, foreign competition is no bugbear. It is an indisputable fact that for many years past foreign manufacture has been developing much faster than our own, and at no former time were we so hard run by the foreigners as at present. Take engines and machinery for example. We are every year losing ground in foreign markets, whilst American tools, hardware, and other articles are actually brought into England, sure of defeating the production of home makers both in quality and cheapness." But it is not only in engines and machinery that we are losing ground, but in ordinary steel and iron as well, for besides springs of iron and steel brought from the Continent, nails of wire are actually being imported in large quantities into some of our mining districts in particular, and at a price that ensures for them a rather ready sale. Even in raw material, such as ironstone, lead, and copper, we now largely depend upon our foreign supplies, and at such a low rate with respect to the two latter that our own mineowners are unable to sell at a profit. So there is no use in our manufacturers and workmen believing, as the latter in particular are wont to do, that they have nothing to fear from competition. At the meeting at Newcastle to which we have alluded, Mr. Lowthian Bell, speaking on the subject, said—"I have had abundant opportunity to study the development of foreign industry, and cannot refuse to believe the evidence of my own senses. I am bound to say there is a good deal we have reason to be alarmed at, as a matter of competition, in the position of foreign industry." If we go from the Continent across the Atlantic we find that during the last few years great changes have taken place with respect to the iron and steel trades of America, the people there having been most active in the development of their own mineral riches. In 1872 we find that the United States imported 600,000 tons of iron and steel rails, and in 1877 the imports of them had fallen, whilst for the first three quarters of the present year the quantity was only about 800 tons. On the other hand, their home production went on increasing until in 1877 it reached 160,000 in excess of the quantity imported in 1872, or 760,000 altogether. These facts are in every sense significant, and plainly show it is time when both masters and workmen should seriously consider how they are affected by foreign competition, and as to the best means for meeting it in the future.

STEEL RAILS IN NORTH AMERICA.

The important announcement is made that, in consequence of the substitution of iron bridges for wooden structures on the Central Pacific Railroad, and also in consequence of the substitution of steel rails for iron rails upon an extensive scale upon the system it has been found practicable to effect a considerable reduction in the "track force"—or, in plainer English, in the permanent way staff—hitherto employed in connection with the undertaking. We recently called attention to the important reduction which the use of steel rails had effected in the maintenance charges of the Great Western Railway of Canada, and we find that the working expenses of the Detroit and Milwaukee Railway—an ally by the way of the Great Western of Canada—have also been very satisfactorily cut down mainly through the use of improved rolling stock and steel rails. The Detroit and Milwaukee, like the Great Western of Canada, has suffered grievously from the depression of the times, as well as from unremunerative freight rates. Nevertheless, the Detroit and Milwaukee succeeded in bringing down the rates of its working expenses from 89·98 per cent. in 1875, to 86·08 per cent. in 1876, and 81·04 per cent. in 1877. The current year has scarcely run its course, but there is reason to believe that when the accounts relating to it are finally made up it will be shown that the ratio of the working expenses has been further reduced to 70 per cent., and even a little less. It is calculated further that if traffic should be pretty well maintained in 1879 and 1880 the working expenses will a make a still better exhibit.

The advantages which the railroad interest of North America has derived from the use of steel rails have probably not been fully appreciated by reason of the unfortunate fact that the economies secured have been, to a great extent, neutralised by the reductions—and it may be said the insensate reductions—which have been made from time to time in freight rates. Another difficulty against which North American railroads—and certainly Canadian railways—have had to contend since 1873 has been the extreme depression of trade which followed the great Jay Cooke panic. Vast as the resources of the United States undoubtedly are, and elastic as the character of the American people unquestionably is, it has taken five years to heal the wounds inflicted by the disasters of 1873. The depression of trade in the United States reacted upon the not very vigorous commerce of Canada, and we fear that affairs in the Dominion are still far from being in the condition in which we should desire to see them. Still business is, upon the whole, improving in North America, and now that more reasonable ideas are beginning to prevail in regard to freight rates, now that sound financial principles are finding favour at Washington, and now that gold has gone to par at New York in anticipation of a resumption of specie payments upon the 1st prox., we may expect to see increased profits realised upon, at any rate, some of the better managed railroads of the United States; and should this anticipation be realised we may depend upon it that the benefits which steel rails have conferred upon the American railroad interest will not escape attention. The directors of the Central Pacific Railroad have used no less than 10,000 tons of steel rails upon that vast and interesting undertaking during the current year, and the Bessemer steel rail mills of Pennsylvania—the great metallurgical State of the wonderful American Republic—are now about as fully employed as they well can be.

The managers of American railroads have thus shown themselves fully alive to the advantages resulting from steel rails, and the investing public will probably take a similar view of matters during the next few months. We are far from saying that steel rails will entirely rescue the American railroad interest from the discredit in which it has been languishing. But we unhesitatingly affirm that those American railroad companies which have had sufficient resources at their command to avail themselves of steel rails upon a considerable scale will derive very solid and enduring benefits from the adoption of a steel rail policy; in fact, these benefits are already being realised.

PRINCESS ALICE MEMORIAL ORPHANAGES FOR MINERS' CHILDREN.

The desirability of establishing a National Permanent Fund for the Relief of Distress caused by Mining Accidents was fully discussed in the *Mining Journal* of Oct. 19 in referring to the movement inaugurated by Mr. Ellis Lever, of Manchester, and although, as is the case in all such matters, there are some slight differences of opinion as to the most ready means of attaining the object in view, the proposition has been very well received, and there is a good prospect of success being achieved. The relief of those left destitute by death or disablement resulting from accidents in mines naturally divides itself into provision for the sufferers who have escaped death, provision for widows, and provision for orphans, and in connection with the latter branch of the subject a thoroughly practical suggestion has been made by Mr. Ellis Lever—to make the care of miners' orphans a permanent national memorial to the Princess Alice. Although it is not the practice for the Sovereign to connect herself with the promotion of philanthrophic societies, however good their object, there can be no doubt, from the kind feelings expressed on her behalf, that as soon as the proposed Fund is in a position to apply in its corporate capacity the honour of the name of the Queen as patroness would be readily obtainable. Even in reply to his irregular memorial Mr. Ellis Lever received a very polite acknowledgment, in which Sir Thomas Biddulph, writing by desire of Her Majesty, a few days before his death, said—"The proposal contained in your memorial has received the Queen's best attention, and it is hardly necessary to say with what satisfaction Her Majesty would view the establishment of any plan by which immediate and permanent relief might be afforded to those who, by the sudden death of the supporter of the family, are at once rendered destitute."

The arguments in favour of a Miners' Permanent Relief Fund have been constantly repeated, and are really embodied in Mr. Ellis Lever's observation that he was deeply impressed with the fact that while bountiful contributions flow in when a great mining disaster occurs, no adequate provision is made for the sufferers by the smaller and every day casualties, which in the aggregate destroy three-fourths of the entire number of men who perish in the perilous work of mining. It will be recollected that at the conference at Manchester, which has already been referred to in the Journal, a provisional committee, which includes, amongst others, the Bishop of Manchester and the Mayors of Manchester and Wigan, was appointed to carry out this most desirable object—the formation of a fund to be available in all cases of mining accidents, to which fund owners of mines, lessors, colliers, and other workmen are invited to subscribe systematically. This fund will be augmented by bequests and subscriptions from the public, thus combining the double advantage of a national fund and an extension to the whole country of the excellent principle of voluntary assurance already in successful operation in three of the chief mining districts of the kingdom. As a member of the provisional committee Mr. Lever respectfully and earnestly asks his fellow-committemen and the public to consider the following proposition, embodying the idea expressed in No. 4 of the objects specified in the circular issued by the committee—the raising of a special fund for the establishment of orphanages in various parts of the kingdom for the sustenance and training of children who have been rendered fatherless by mining fatalities. These orphan homes and industrial schools for the destitute children of miners might, he thinks, be appropriately named The Princess Alice Memorial Orphanages, as an enduring national memorial of affection for our beloved Sovereign's good, gifted, and compassionate daughter, whose recent death the country now mourns with the deepest sorrow, and who, as the Prince of Wales, in a letter quoted by Lord Granville, said was "so good, so kind, and so clever."

The average number of deaths from accidents in mines is abou

1200, and it is estimated that not less than 2000 orphans are left unprovided for every year, and for these it is really a duty of every coal consumer to assist to maintain, for, as Lord DERBY said when inaugurating the Haydock Colliery Relief Fund—"Every consumer of coal is really an employer of these men, who pass the greater portion of their days in darkness, discomfort, and even danger in order to provide what we require. It is to me a constant satisfaction, not wholly unmixed with surprise, to see how contentedly and cheerfully in this country the irregularities of fortune are borne, and the least we can do, we who enjoy so much and enjoy it securely, is to come forward cheerfully and liberally when we have an opportunity of showing sympathy with those on whose unceasing toil the prosperity of England is built up." Mr. LEVER'S proposal embodies and amplifies the idea expressed in No. 4 of the objects specified in the circular of the committee—the raising of a special fund for the establishment of orphanages. There can be no doubt that it is highly desirable, and he believes quite practicable, to raise a fund sufficient to found seven orphanages in the principal mining districts for the maintenance of fatherless and destitute children of miners. He estimates the preliminary cost of these National Memorial Orphanages at about 350,000*l.*, a sum only equal to the amount raised in a few weeks for the relief of the unfortunate shareholders in the City of Glasgow Bank. He would suggest that the Orphanages be located in, or represent, the following mining districts:—Devon and Cornwall; South Wales, Monmouthshire, Gloucestershire, &c.; North and South Stafford, Shropshire, and Cheshire; Lancashire, North Wales, and Ireland; Midland counties, York, Derby, Nottingham, and Leicester; Durham, Northumberland, and Cumberland; Scotland.

With regard to the training of the orphans, Mr. ELLIS LEVER'S suggestion is one to which exception can scarcely be taken. The boys should, he remarks, receive a plain and useful education, and special care be taken to provide a diet and physical training to fit them for the arduous employment of destined mining workers. The girls would, no doubt, receive a training calculated to fit them for domestic service, and for other suitable employments. There is not, so far as he is aware, in the United Kingdom a single asylum for the orphans of miners killed by accident. He knows that great privation generally prevails, and that public benevolence is heavily taxed at the present moment. But, besides the fact that distress is perhaps greater among the mining population than any other class, the recent death of the lamented princess seems to suggest the period as singularly opportune for at least drawing attention to the orphanages, and making a start in respect to that part of the work which the committee have taken in hand. It is perhaps a fault in connection with all movements of this kind that so many fail to subscribe because they are unable to send a handsome amount, but in this case even the least wealthy might usefully assist by forwarding only a tonnage rate upon their last year's consumption. If this were fixed at 6d. per ton, and the subscription were general, the amount realised upon domestic consumption alone would more than suffice for all that is sought to be attained. The object is one in every way so commendable that no effort should be spared to bring it to the notice of all classes, and to obtain their co-operation and support.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Dec. 26.—Coal for domestic purposes keeps in very active demand, and some collieries are making full time. As I have previously intimated, the Cannock Chase strike threw a rush of orders on to the Thick coal pits of South Staffordshire. Now that the strike is over orders are being more equally distributed, and the pressure upon the Thick coal pits is less severe. The Sandwell Park Colliery has benefited in a conspicuous degree by the temporary suspension of operations on the Chase. Last week nearly 5700 statute tons of house coal and slack were drawn from one shaft, and even this quantity is reported to have been scarcely equal to the demand. The exploring road at Sandwell is now one mile long. There is no "fault" in the driving, and at the point nearest to the trial sinkings at Hamstead the coal is 8 yards thick. Difficulty in getting the coal away from the pits is experienced by the freezing of the canals, and land carriage is, therefore, more than ever resorted to. The trade is exercised upon the subject of the indexing of canal boats, in accordance with the new statute, but nothing is yet known as to what action the canal companies will adopt upon the resolution of the trade, which I reported in my last. The Cannock Chase trade were not represented at the Birmingham meeting, and some doubt exists as to what course they will take, but it is to be hoped that they will show themselves equally desirous with the South Staffordshire masters to carry out the provisions of the new Act. The iron trade will also be affected by the statute as regards the weights which can alone be legally used. A circular calling attention to this has been issued by the district Inspector of Weights and Measures. The highest standard weight which is allowed is 56 lbs., and the weights of 112 lbs. each, which a large number of ironmasters have ordered, will be useless, as the Inspector will be unable to stamp them. Hitherto manufacturers have been accustomed to weigh iron, particularly pigs, by putting one or two large pieces of iron on the scales to represent 1 ton, but now 40 weights of 56 lbs. each will have to be used. The depression in the pig-iron trade continues to result in the blowing out of furnaces. Messrs. Turley and Co., of the Foxyards Furnaces, near Coseley, have now determined to blow out, and their men have received notice to leave. An attempt is being made to get a reduction of the railway tariff on the carriage of pig-iron between Middlesborough and this district. A memorial with this object, to be forwarded to the three chief railway companies, is being extensively signed by traders hereabouts. The freightage is now 12s. 6d. per ton, with an additional 1s. per ton for delivery at buyers' works. Between Middlesborough and the French and German ports the carriage, of course by water, is only from 5s. to 6s. per ton. The mills and forges are this week entirely laid off for the holidays.

The death is announced, at the age of 76, of Mr. John S. Dawes, of Edgbaston, near Birmingham. The deceased gentleman was the founder of the large and important firm of John Dawes and Sons, of the Bromford Ironworks and the Oldbury Furnaces and Collieries. Mr. Dawes will be recollected in connection with his well-known patented invention for the application of hydrogen gas in the blast-furnace. He retired from the iron trade about 20 years ago, and in 1861 commenced and carried on to a successful issue, single-handed, the famous Manor Lane Colliery sinkings in East Worcestershire. Coal was found at a depth of 1200 ft., and when Mr. Dawes sold the colliery about two years ago it was second to none in the district, having a producing capacity of 500 tons from one shaft alone daily.

The only fresh news of importance in the North Staffordshire trade is that the workmen and colliers at the Scotch Works, Tunstall, at the London pits, and at the Brownhills Coal and Ironstone Company's works, Tunstall and Burslem, have received notice of a 10 per cent. drop in wages. Further reductions are expected.

MR. JOHN S. DAWES.—The death of this gentleman, who is justly entitled to the credit of being one of the founders of the Birmingham and Midland Institute, since he not only most handsomely assisted the object with funds, but worked with the most untiring zeal and energy to secure its success, will be widely regretted. He was born at Littleton Hall, West Bromwich, in the year 1802 and when only 21 years old became senior partner with his brother in the well known iron and coal firm with which his name is connected. He was buried on Tuesday at Smethwick, his funeral being attended by his sons, nephews, and numerous friends and servants of the family as well as residents, which shows the respect and esteem felt for the deceased in the neighbourhood. In 1849 he patented an ingenious invention for the application of hydrogen gas in the blast-furnace, modifications of which have been several times repatented. About 20 years ago Mr. Dawes retired from the iron trade, and devoted a great deal of time to his favourite scientific pursuits—geology and fossil botany. He has left an indelible mark in the pages of scientific records by the numerous able and interesting papers he contributed to the Geological Society of London and other scientific societies in England; and he is understood to have possessed one of the finest private collections of fossil plants in the country, including some specimens and cut sections of great rarity and value. In 1861 Mr. Dawes commenced the famous Manor Lane sinkings in East Worcestershire. This trial, perhaps one of the most spirited single-handed undertakings in search of coal ever attempted in the annals of mining, was carried on for years with the most indomitable pluck and perseverance, in spite of almost insurmountable difficulties, until, at a depth of nearly 1200 ft. the coal was found, and although in the shafts it was poor and thin, yet by further explorations Mr. Dawes succeeded in opening out a workable seam, and when he sold the concern about two years ago the plant and work were so greatly developed as to be second to none in the district, being capable of turning out from a single shaft alone upwards of 500 tons of coal per day. Messrs. Dawes have also extensively engaged in metalliferous mining in North Wales, Mr. J. Dawes, jun., having had the management and superintendence of the principal works near Mold—the Pant Du Mine.

SALT IN THE PUDDLING FURNACE.—The success of Mr. James Barnett's process for using salt in the puddling furnace appears from the trial, extending over some months, at the Castle Iron Company's works has been complete. In its application to 13 furnaces the saving in fettling and scrap alone is estimated to be 2000*l.* per annum. Mr. Barnett claims that beyond this he has saved upon the make of 10,000 tons 5s. per ton, or 2500*l.* more. In the earliest experiments he started upon hungry iron, with a bottom which the general manager admitted was not very good, and at the end of the shift had a bottom in perfect condition; the process has since been constantly used. His iron was made with two pigs cinder each heat, and to make up the men's weight the charge was increased by ¼ cwt. Even with this there was such a saving of time in the heats that an additional heat, for which the men are paid 10 per cent. extra, has been obtained, no additional gas being required; Siemens' furnaces are employed. The use of salt is no novelty, but Mr. Barnett's method of using it makes a success instead of a failure. To render the puddling bath perfectly saline was the necessity, but to do so without hardening the iron was the difficulty. Mr. Barnett states that he dissolves the salt and the difficulty, and that that is all.

REPORT FROM CORNWALL.

Dec. 26.—It is almost needless to say that this has been a quiet week, with very little business doing. Holiday time is always very much the same whether business under ordinary condition is brisk or dull, but certainly when dulness is general Christmas does very little to revive it. We shall end the year now in all likelihood at present prices, and once again look to the New Year for the good time coming. Now that the "mountain of tin" bubble has been so thoroughly burst, thanks to the *Mining Journal* and its correspondents, and that our warlike difficulties seem to be near at an end (but quarrels can always be had for the seeking, and peace is by no means fully assured), we may fairly hope that matters will speedily show substantial amendments. How bad the times really are the state of the parliamentary notice record gives ample proof. There are only two notices for legislation in the coming session affecting Cornwall, and one of these is to give the Cornwall Minerals Railway power to issue new debentures, and the other to enable the abandonment of the East Cornwall Minerals Railway.

A new hand-power boring-machine—Fritz's—is being worked at South Roskear. It is not at all of the ordinary air-cylinder type, but is driven by a spiral spring; it is a German invention. Whatever 1879 may otherwise be noted for in connection with mining enterprise in the county it will certainly be a year of boring-machines, for more advance has been made in that direction in the past twelve months than ever before.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Dec. 26.—Very litte work has been done during the week, for not only has the holidays but the weather as well militated against the carrying on of several branches of trade. The consequence of the slackness which has prevailed for a considerable time, and the severity of the season, has been a vast amount of distress in both mining and manufacturing districts, which has been met by the benevolence of the public. In the lead districts of Derbyshire operations have gone on much as usual, although the snow has led to some interruption, but the number of hands employed is less than in some former years. No doubt the low price of lead has had something to do with keeping production down, seeing that for a long time no new works have been commenced, while many small concerns have been abandoned. The season, however, has in no way interfered with the output of pig, for the furnaces have to be kept going at all times, so that the imports of ironstone from both Northamptonshire and Lincolnshire have been kept up to the average. The foundies have been quiet, and at Dronfield the steelworks are about to undergo some improvements and alterations, so that most of the workmen will be standing for some weeks to come, and this certainly comes at a most inopportune time, but such has become the competition, in steel rails in particular, that it is necessary to have all the essentials for turning them out at the lowest possible cost. Up to Christmas Day a very good business was done in house coal from Clay Cross and other of the leading collieries, and a large tonnage, as usual, was sent to the Metropolis, seeing that very little will be forwarded during the last two or three days of the week. Steam coal, however, is still quiet, and the same may be said with respect to engine fuel, slack, and smudge.

The distress in Sheffield has turned out to be much greater than was anticipated in the first instance when the Mayor initiated a relief fund, and a much larger sum than has been subscribed will be required to meet it. So far indeed from the number of recipients being likely to decrease the probality is just the reverse, for on Saturday last upwards of 200 men in the employ of Sir J. Brown and Co. received notice that their services would be dispensed with. What is termed "Bull Week," the one preceding Christmas Day, when the men in a tolerably busy season in Sheffield work night and day, so as to be prepared with the means for keeping the holidays in a hospitable manner, and at the same time clear out orders in haud, was a very poor one this year, and very little "Bulling" was done even on Monday and Tuesday nights, whilst hundreds were entirely idle. One or two of the cutlery houses were able to provide some extra work, as well as some of the silver-plated establishments. In nearly all the other branches, however, quietness ruled. It is not unlikely, however, but what some of the mills will commence working rather more favourably in the new year, for very little will be done before. The Bessemer Works do not appear to be quite so busy as they have been, but as yet there has as a rule been plenty to keep the hands on full time. But profits have come down very much, whilst other places where steel rails are now largely produced have advantages that Sheffield has not, so that the latter is in some instances 4s. to 5s. per ton worse off than the works close to a sea-port. Very little has been done in iron rails for a long time past excepting indeed for colliery purposes. Engineers and mechanics have been badly off for some months, and as yet there are no signs of any improvement. Scissors makers have also been quiet, and the German makers appear to be doing a good business in this country, being able to undersell us, and their goods are very well finished, although the material may not be quite so good as our own, but then the price is nearly one-third less. For some descriptions of tools, as well as cutlery and other goods, Australia has taken from us a considerable quantity of late, whilst a little more has also been done with America. In saws, files, and picks business left off quiet.

In South Yorkshire the Coal Trade, so far as relates to household qualities, was well maintained up to Tuesday, and a full average tonnage passed over the Great Northern to London, but there has been very little change in other qualities. Coke, however, has scarcely been in such good request, but at the same time there has been no falling off in the quantity sent to the ironworks in North Lincolnshire. The important question now being discussed in the district is the proposed reduction of miners' wages, it being in some instances 12½ per cent., and in others 7½ per cent., the difference being as to the thickness of the seam of coal at the different collieries. The men are strongly opposed to any reduction whatever, and where it is insisted upon the result will, undoubtedly, be a strike, which could not fail to be injurious to all parties. The representatives of the miners, however, are to meet some of the members of the Coalowners' Association to-morrow (Friday) at Sheffield, and the result is looked forward to with the greatest interest by the workmen and their families, who are not in a position to stand out for even a comparatively short time.

The Sheffield Red Book for 1879 gives some startling figures relative to the depreciation of joint-stock undertakings in that town. There are about 60 of these companies in Sheffield and its neighbourhood, chiefly coal and iron companies, rolling mills, steel works, electro-plate works, carriage works, and the like, and they have a total paid-up capital of 7,667,892*l.* In the case of 11 of these companies the present market value of the shares aggregates 504,775*l.* more than par, but the depreciation upon the rest amounts to 3,098,057*l.* There is therefore a loss on these undertakings, taken altogether, of upwards of 2,500,000*l.*, supposing that these shares could be realised at their present quoted prices. Twenty companies are in liquidation. A year ago, when the same table was published, the total depreciation was less by 1,064.374*l.* than it is now, and it was then considered to have reached its worst. Reasons are given now for thinking that the depreciation is excessive, for the shares of some companies which are still paying dividends of fair amount and which are otherwise in a sound position are now quoted at a discount. The bad companies have, in fact, reacted on the good to their prejudice; but, admitting this explanation, the disastrous character of the figures is something hardly to be exaggerated or realised, and we trust that the decline in values may indeed be found to have reached its limit.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Dec. 26.—Another Christmas has come, and still there is no alteration for the better in the staple trades of the district; indeed, the change has been for the worse, if anything, and South Wales certainly never presented such an aspect of gloom as it does now. Thousands of men employed in the staple trades have for a long time been scarcely enabled to procure even the barest necessities of life, and the Christmas holidays must be to many an enforced period of idleness, without the festivities usually supposed to characterise the season. An order has been made by Vice-Chancellor Malins for the compulsory winding-up of the West of England Bank. There appears to be no doubt that all the creditors will be paid in full. A new banking organisation has been—or, rather, is about to be—formed, entitled the National Bank of Wales. The capital is one million, and a large proportion of this is said to have been subscribed at Manchester, where the concern has been initiated. Coming of age rejoicings have been held at the Avon Vale Tinworks, Aberavon. Mr. Evan Davies, son of Mr. Edward Davies, part proprietor of the works, has been presented with a gold watch and chain, a portrait of himself, and an address on vellum by the workmen. It is stated that Mr. Crawshay has received some good orders for steam coal, which will have the effect of keeping some of the collieries going for some months to come. A deputation of colliers has waited upon the authorities, and asked for an abolition of the double-shift system, but no hopes, so far as this is concerned, were held out.

The hopes of getting out the bodies now entombed in the Abercarn pit are apparently as remote as ever. One local paper goes so far as to hint that the work had better be abandoned altogether, but it yet remains to be seen whether this course will recommend itself to the officials of the Ebbw Company. The latter are, however, expending a large amount of money every week in endeavouring to get at the bodies.

The iron trade shows no signs of increased activity, and, as a natural consequence of the present holiday season, there has been little doing at any of the works. There is little or no demand for railway iron, and prices have not moved in the least degree. The same remark applies to steel rails, which sell at exceptionally low rates. Clearances during the last few days have been small, but shortly it is expected some fair parcels will go to Australia. It is satisfactory to state that although a petition has been presented for the winding-up of the Blaenavon Company, there has been no cessation of work among the thousands employed there.

The tin-plate industry still maintains a satisfactory tone, and prices continue to exhibit a slightly upward tendency.

With regard to the coal trade, as a matter of course shipments have fallen off during the week. There is no change in prices, but they are a trifle firmer. At several of the collieries there is more briskness observable, and this remark applies to the Rhymney Valley. There is a fair demand for steam coals, especially on foreign account. House qualities are in active demand, comparatively speaking. Patent fuel is very dull.

TRADE OF THE TYNE AND WEAR.

Dec. 26.—There has been considerable activity in several branches of the Coal Trade of late. A winter of great severity has continued for some time, and that has, of course, stimulated the house coal trade. In Durham the house coal collieries are well employed, the inland demand especially being brisk. Considerable shipments of the coal have also been made. Contracts for gas coal are now being made for over next year at about 7s. per ton. Many of the steam coal collieries of Northumberland have also been well employed, and as the men are anxious for work not much time will be lost over the Christmas holidays. At Hebburn Colliery work has been resumed, and many ships are waiting their turns for loading there. Full work is expected to go on there up to the end of January at all events. There has been a meeting between the men and masters at Wardley Colliery, but no solution of the difficulties has yet been arrived at, the masters insisting on the full reduction demanded. At several of the collieries the snow interfered very much with the working of the wagonways, but as large gangs of men have been employed clearing it away this difficulty will soon be got over. The leading coal trades on the Tyne are gas, steam, and manufactory; the house coal trade is small, the principal portion being shipped in the Wear. The best gas collieries have been kept pretty well going during the past year, the prices realised being 6s. to 7s. per ton. The cry made about the electric light will not prevent contracts being made during next month for the next year at about 7s. per ton, and in extreme cases 7s. 6d. per ton.

Until there is a considerable revival of the local manufacturing trades we fear coals will only have a poor market at low prices. On the whole, the steam coal trade has been very bad during the past year, but the prospect at present is somewhat improved, as coals are produced at a cheaper rate, and the coalmasters are in a position to compete with other districts. The bulk of the Northumberland steam coals are shipped in the Tyne, only a few favoured works having facilities for shipping them at Blyth at a short distance from the works. As we have before noticed this subject has received much attention from the coalmasters during the past few months, and it is proposed to remedy this by providing increased facilities for shipping these coals at Blyth, and also it is proposed to form a line of railway. Sir Matthew White Ridley has taken the matter in hand, and it is proposed to make a line of railway from Bebside to North Blyth, taking in the bulk of the large works. It is evident Blyth harbour is the natural outlet for these works, and the formation of this line will be a great boon to the coalmasters in this locality, as it will reduce the cost of transit very much.

The iron market at Middlesborough on Tuesday, though fairly attended, was very slack, consequent chiefly upon the end of the year being close at hand, with very little iron required for consumption, owing to works being largely at a standstill because of stock taking; very few sales are consequently being made. The quotations are not much different to last week, though there is a weaker tendency. Makers are about 35s. No. 3, and 34s. 6d. No. 4 forge, but in some instances 3d. less has been taken. Merchants are offering iron at about 6d. less than makers. The deliveries of pig-iron for shipment have been pretty steady, and though about 6300 tons were sent to Scotland last week this was less by 2500 tons than the deliveries in the corresponding week of the previous year. The Scotch

trade has, however, everything considered, been taking iron well during the present month. Fresh contracts are not, however, being entered into for next year on Scotch account, as there is not sufficient margin between Scotch and Cleveland prices to enable the latter to be delivered profitably in Glasgow. Hopes are entertained that the movement in progress for reducing the dues to Staffordshire for pig-iron will be in a measure successful, and thus prove the means of considerably enlarging the trade with that district. The finished iron trade and other departments will necessarily be very quiet for the next week or two. Comparatively few of the works will be going through the holiday season. Plate mills are deficient of specifications, and thus work is considerably retarded. Bar makers experience no change for the better, and the demand, which has been very quiet for some time past, still continues in the same position. The late prices of 5*l.* 5s. are barely supported. Angles are 5*l.* 5s. to 5*l.* 7s. 6d., and ship-plates 5*l.* 12s. 6d. to 5*l.* 15s. There is some enquiry for tramway chairs, and founders in many instances will enter upon the new year with a fair extent of contracts on their books.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Dec. 26.—I can assure "Mining Agent" that his announcement of the fact that the South Cambrian Mines contain more than 5 tons of blende to the linear fathom is a source of pleasure to me; but does he not see that this increases the force of my argument that a mine in which ore is laid open in paying quantities, especially to the extent of over 5 tons per fathom, has no need whatever either to borrow its neighbour's name or commend itself to the public estimation by asserting the productiveness of its neighbour's lodes. The Camdwr Mine, with 5 tons of rich lead ore per fathom is, of course, a richer prize than the South Cambrian three times over; the only marvel to me is that the riches of these two mines should not have been discovered before. However, their present fortunate possessors will, doubtless, keep their good luck to themselves, so that the investing public will hardly be able to get a slice of it except at a premium.

The article on "The Lead Mines of Flintshire and Denbigshire," which appeared in last week's Journal, seems to me open to a few remarks which, with all deference, I will briefly make. In the carboniferous rocks of these counties there are two mineral-bearing zones. The first and uppermost lies near the base of the millstone grit, not in its upper portion as forming the coal measures, and this zone corresponds to that of the lead-bearing limestones of the North of England. The second and lowest lies in the pale-coloured limestones near the base of the carboniferous limestone series (the "primitive limestones of the paper"). Between these two zones there is a great thickness of black and grey fossilliferous limestones and shales, in weich the lodes are, commercially speaking, unproductive of metallic ores. So far from the lodes and flats in these lower beds being bunchy and uncertain, the North Hendra and the Gorsedd and Merllyn lodes and flats are now worked in this zone. At Great Holway the tributers at the shaft, by the turnpike-gate, are working in the upper zone, but the deep adits and stopes of that property will be in the lower beds, as at Gorsedd and Merllyn. The same is true of several of the other mines enumerated. The idea of three parallels hardly conveys a correct notion of the facts of the case.

The news from the progressive lead mines of Carnarvonshire is, on the whole, cheering, and with the completion of the machinery at D'Eresby Mountain, and the use of steam power at Pandora, we may hope for some early satisfactory results.

The whole of the men belonging to the slate yards at Bangor have resumed work, with the increased time to be worked on Saturday afternoons. A general meeting of the employers of labour at Bangor is to be held presently to decide upon the adoption of the same hours of labour for the whole of their workmen. At the great slate quarries at Llanberis the men are only to work four days each week. There are literally no foreign orders coming in, and last week there were but three vessels loading at Portmadoc. The Carnarvonshire slates have hitherto been dearer than the Merionethshire by about 5 per cent., but to the surprise of the Festiniog quarry owners the authorities of the Penrhyn quarries are now offering their slates at the same price. But no amount of reduction seems to have the effect of increasing sales. The owners of one of the largest quarries expressed to me the other day his opinion that it would take two years for the trade to recover from its present depression. With wages low, now is the time for the holders of good slate properties to gradually develope and prepare for the return of prosperity, which must inevitably come, for with slates at fairly remunerative prices we may defy American and even Italian competition, which is the latest innovation.

A reduction of wages is taking place at the Brynkinallt and other neighbouring collieries. The severe weather has created a demand for house coal, but the lack of orders for manufacturing purposes is severely felt.

Mr. Philip Young, underground manager at the Cae Pen Ty Colliery, Wrexham, was fined 8*l.*, with damages (10*l.*) and costs, at Wrexham on Wednesday last for knocking down a sheriff's officer, who it appeared had no right to be on the colliery. The damages had been laid at 50*l.* Mr. Young regretted the offence, but pleaded great provocation. The contract for the construction of the Ruthin and Cerrig-y-drindion Railway was signed last Thursday by the contractor, Mr. Fryer, and for the shareholders by Lord Bagot and Mr. S. C. Mainwaring. If an engineer could be found willing to survey a narrow gauge and scare railway from Llanfihangel or Ynyslas by Taliesin and Talybont to the North Cardiganshire mines would it help towards tangible results? One could be forthcoming if it were probable it would.

REPORT FROM THE FOREST OF DEAN.

Dec. 26.—But few changes have occurred in the local industries since our last report. The household coal trade has experienced some further improvement, and the output is now understood to be greater than for a long time past, and it is pleasant to record that colliers on the eastern side of the Forest are very generally in regular and full employment, though they affirm that earnings are not what they ought to be. Still, we hope that there will be no rash act on their part to check the improved trade. If they would look at things aright they would see that the long and general depression of trade does not justify any great advance in wages, seeing that some employers have been carrying on their works at a loss for some time past, previous to the recent improvement, and, of course, such capitalists require in fairness to recoup themselves before it would be legitimate on their part to increase their expenses by a rise in wages. We hope that the colliers will be cautious about being led into any suicidal acts of procedure. Let them rather unite with their employers by making the best of improved trade by sticking to their work regularly whilst they have the chance. The proprietors have felt justified in advancing the price of coal to what is called the country trade 1s. a ton, and 6d. a ton to the merchants, and we think that they had better let prices rest at those advanced rates.

The pig-iron manufacture is still wretchedly low, nor does any improvement seem likely just now. The forge, however, is fairly active, but the tin-plate trade is at *statu quo*. Some litigation cases have been recently disposed of. Mrs. Laxley some years ago had an award of 6000*l.* against Messrs. Teague, Thomas, and Co. Teague has since died, but Mr. J. T. Thomas sought to compell a partner called Atherton to bear part of the cost (award), but as he was only a sleeping partner, the Court gave judgment against Thomas, so that he has to pay the amount of award, and the cost of the appeal. The other case had reference to a director in a company, where the judge decided that the director not being cognisant of the act could not be held responsible, so Mr. Barrett escaped. The sewage dispute is still unsettled, the owners of property who allege damages against the sanitary authority having obtainted counter evidence—but as that evidence has not been made public, we are not in a position to offer any definite opinion as to its value. We think, however, that the leading men of the district are likely to bring heavy burdens on the inhabitants of the Forest. We may shortly have something further to offer by way of remark, but for the present dismiss the subject.

THE DORTMUND ROCK-DRILL.

Some improvements in reciprocating or percussive rock-drills have been invented by Mr. F. Pelzer, of Dortmund, Germany, in connection with the slide-valve motion, the automatic and gradual turning of the tool, the automatic feed, the automatic and continuous removal of the debris from the bore-hole, and an adjustable stand for the machine. The slide-valve may be of the ordinary D, or mushroom type, the valve-rod being actuated by two levers centered near the extremity of the piston-rod when at the ends of the stroke, one end of each moving freely in a slot of the rod, while the other comes in contact with a nut or other projection on the piston-rod, so that at the end of the forward stroke the lever at the end is struck in the same direction, and thus jerks the valve-rod backward, the opposite taking place when the piston-rod is about to complete the return stroke. The violence of the action is checked by buffers and springs placed at each end of the valve-chest, the india-rubber or other elastic material which is used for packing usually serving as a spring. For the purpose of affecting the turning of the tool and the forward movement of the machine or feed automatically a side lever is employed, which has a cranked end working in a slide to which the clacks are attached which turn the ratchet wheels. One of these sits on a square rod which works into the piston-rod, the other is fixed on the nut of the feed screw usually placed immediately below. The cranked lever just mentioned is pressed by a spring on the same projection on the piston-rod which works the slide-valve, and is so constructed that it slides on it. Hence when the piston-rod arrives nearly at the end of the stroke it comes in contact with the said lever, and presses it outward against the pressure of the spring, the lever moves the slide, and with that the clacks. The ratchet wheels are so pitched that each stroke of the piston is sure to cause the ratchet wheel at the end of the piston-rod, and with it the rod itself, to turn one tooth, but the wheel of the feed screw nut is pitched somewhat coarser, so that it always works on the same tooth so long as the piston makes a stroke of normal length, but whenever this length is exceeded the point of the clack, from the longer movement of the lever and slide, gets over the point of the tooth, and consequently moves the wheel one tooth.

For the purpose of automatically removing the debris from the bore-hole Mr. Pelzer employs water under pressure. He forms the cylinder cover into an annular casing of a little over the length of the stroke, having a double gland, one to form a separation between this chamber and the cylinder proper, and one to make a joint in the end or cover proper. The double gland is so formed that both joints are screwed up simultaneously by the same screw, the two rings being connected by bars in the annular space, which, however, do not touch the piston-rod. The piston-rod is provided with an internal passage running from the socket, and opening into the annular space just described. The tool or drill has also an internal passage opening near the cutting edge, a joint being made in the socket by an india-rubber ring, and the socket being screwed up by binding screws or bolts. The annular space or chamber is supplied with water or other fluid under pressure through a pipe and tap on the chamber, and connected by a flexible or other tube with the reservoir. The internal passages may be formed in any convenient manner, but they are most easily made in the drill by rolling. The reservoir is a vessel of convenient form mounted on wheels, and provided with air and water taps; also with funnel and valve for filling. The front has two arms holding an upright screwed pillar, with ends adjustable against the floor and ceiling of the workings by means of screws and nuts. This pillar carries as many screwed cross bars on armed nuts as there are to be drills, and on these cross bars are placed carriers or saddles to receive one end of the drills, the other ends being supported on plain carriers fixed to cross bars formed of pipes with solid cores which can be drawn out and fixed against the sides of the workings. These cross bars are supported by simple upright rods and suitable brackets with set screws.

For single machines he uses an adjustable stand or tripod, consisting of two bridges provided with eyes for carrying the spindles of the drill, and rigidly connected by a central bar shrunk into its place and pinned; it is prolonged at one end so as to form a foot. The two other feet are attached to the opposite bridge, the ends of which are extended beyond the eyes provided to hold the machine. They are formed of split halves, and pivots are inserted with a nut at the top, and carrying a plate with a central pin and a quadrant slot below. Each of these two legs is centred at the pin, and carries a bolt moving on the quadrant slot, and may be moved to any angle the latter will allow. It is fixed in the desired position by screwing up the nut on the bolt in the quadrant slot. The legs consist of tubes carrying a solid sliding core at each end, one forming the foot, the other being the portion centred and moveable on the quadrant plate. The solid cores are adjustable in the tubes by means of collars and set screws. The pivots of the quadrant plate can be turned in any direction and any angle, and the quadrant plate allows a further angle of 90° with the centre of the pivot, thus forming a universal joint.

ARTIFICIAL FUEL MACHINES.

An improved construction and arrangement of machine for making artificial fuel into the forms of half, three-quarter, or complete spherical lumps or balls, or of any other suitable form, has been invented by Mr. R. Easthope, of Bordeaux. It consists principally of two circular wheels or discs arranged vertically, and carried by two shafts or axles mounted in suitable bearings, cast or connected with each other, and strengthened by bars in a strong and substantial manner, the whole being bolted or otherwise secured to the two sides frames of the machine. On the peripheries or edges (which revolve in contact) of the wheels or discs there are formed close to each other, and extending entirely around the said edges, depressions or moulds, those on one wheel or disc being of a half spherical form, and those on the other wheel of a quarter spherical form. From the bottom of these depressions or moulds are tubes extending through the rims of the wheels or discs, and in these tubes are rods, the outer ends of which are normally kept flush with the bottoms of the depressions or moulds by springs acting upon small pistons attached to the inner ends of the said rods, and with them projecting slightly from the inside edges of the rims of the wheels or discs. Fixed wipers or cams are arranged in suitable positions, so that the projecting pistons or inner ends of the rods come in contact therewith at a certain portion of the revolution of the wheels or discs, by which means the rods are pushed on towards or projected slightly into the depressions or moulds for the purpose hereafter described. To the sides of the wheels or discs are secured spur wheels gearing into each other, and acted upon by pinions and gearing suitably arranged and driven by belt or otherwise from any available power.

Immediately over the meeting space, between the peripheries or edges of the wheels or discs, is a hopper for receiving the materials of which the fuel is to be made. This hopper is supported and automatically shaken or moved downwards by a series of levers actuated by bolts or studs projecting at suitable distances apart from the outer face or side edge of the rim of one of the spur wheels, and it is returned upwards to its normal position by the rebounding of a spiral spring placed between the under side of the main lifting lever and the framework receiving the lower end of the hopper. The latter having been charged with the materials from which the fuel is to be made, the machine is set in motion, and the wheels or discs beginning to revolve the material is drawn down between their meeting edges, and thereby compressed and squeezed into the depressions or moulds, that is to say, into the half spherical mould on one wheel and into its meeting quarter spherical mould on the other wheel, until having well passed the horizontal centre line of the wheels or discs, the pistons or projecting inner ends of the rods come in contact with and move over the fixed wipers or cams, causing the rods to be pushed outwards against the three-quarter spherical lumps of fuel, which are thereby prevented from sticking to the moulds, and caused to drop out of the same ready for use.

To prevent breakage of the machinery in the case of stones or other obstruction to the free passage of the material between the wheels or discs, each of the bearings of the shaft or axle carrying one of the wheels or discs is formed at its back part with a curved V or other shaped projection or rib cast or connected with the middle or weakest portion of a hollowed or joggled plate in such a manner that when any undue pressure arises the said bearings pressing upon the hollowed plate cause fracture of the same, thereby allowing the bearings to slide or yield. Instead of making the lumps of fuel in a three-quarter spherical form, as here described, they may be made in quarter and half spherical lumps, as well as in a variety of other shapes, by simply altering or changing the forms of the depressions or moulds to suit the required configuration.

ECLIPSE GAS-ENGINE.

The advantage of gas-engines where limited power is required for temporary purposes is well understood, and an ingenious modification of those previously in use is now being manufactured by Messrs. Louis Simon and Son, of Nottingham, the essential feature being the gradual combustion at each stroke of a previously compressed mixture of gas and air, by passing it through a flame inside the working cylinder. The surplus heat of combustion, instead of being a source of inconvenience, is utilised to generate steam which passes at the same time as the gaseous mixture into the working cylinder, where it is superheated, adding to the power, and protecting the cylinder. An engine of this class of 2-horse power nominal has an 8-in. cylinder, and a piston speed of 294 ft., the air-pump being 6½-in. cylinder, with a piston speed of 158¾ ft. Both cylinder and air-pump are single acting. The indicated horse-power was 4·64. The consumption of gas, taken from a 20-light meter, was 98 cubic feet, as the average of three hours, which gives 21·11 cubic feet per horse-power per hour, including the supply of the constant flame.

When the machine is at work ordinary coal gas atmospheric air is drawn into the air-pump cylinder, and after intimate mixture by compression pass through a flame constantly burning in the interior of the working cylinder, and is there ignited, just as gas is ignited in an ordinary gas-burner. The heat of combustion expands the burning gases, which drive the piston downwards, thus imparting motion to the fly-wheel shaft. In a few minutes the heat of the burned and of the exhausted gases produces steam from the water in a jacket surrounding the cylinder and from water carried in "Field" tubes, round which the hot exhausted gases play. The steam is admitted into the cylinder at the same time as the gas, adding considerably to the power, and diminishing the wear and tear and the need of lubrication. The full mechanical effect of the gas burned is thus obtained, in consequence of which these engines use less per effective horse-power than any other direct-acting gas-engine.

The advantages claimed for the Eclipse engine are that there is no boiler, no fire, no danger, no extra insurance, no special attendance, no coals to get in nor ashes to remove, and no expensive foundation. As compared with other gas-engines there is practically no noise, no constant and expensive lubrication, no rapid wear of essential working parts, necessitating the purchaser keeping duplicates at hand, no explosion, no sudden shock or jar, and no tank of cold water for a constant circulation necessary. Power being imparted at each revolution the motion of the engine is perfectly regular. The working parts are few, and have an easy motion. The engines may be placed on upper floors. They occupy less space than other engines of the same power. A patent governor regulates the supply of gas in proportion to the load on the engine, and keeps the speed even when the work varies. The destructive wear to which all other gas-engines are liable is entirely avoided, The lubrication is as nominal and as trifling as with a steam-engine, and the actual power is in every case higher than the nominal.

IMPROVED PUMPING-ENGINE.

A series of improvements connected with pumping and other engines have been invented by Mr. A. Barclay, of Kilmarnock. One part of the improvements consists in the adaptation of a packing ring to the back of the slide valves for the purpose of displacing the pressure of the motive agent from the back of such valves. The packing ring has two working surfaces at right angles to each other, the vertical or cylindrical surface, which fits and works in the cylindrical receptacle on the back of the valve, and a horizontal surface, which bears against the under side of the steam chest cover or equivalent surface. The packing ring hereinbefore mentioned is kept in its place when the steam is off by one or more springs. Another improvement relates to the working of the slide valve in engines which are not provided with a rotating crank or equivalent shaft. This part of the improvements consists of a tappet rod driven from the piston rod of the engine. The tappets on this rod are for the purpose of actuating the levers by means of which the slide valve is moved into some of its several positions, and for freeing the cataracts by which the valve is moved into certain of its other positions. The outer portion of the valve spindle has formed on it or is fitted with a frame with slots and cross pieces, in and upon which the wipers by which the valve is driven act. The valve gearing is also provided with interlocking quadrants for the purpose of holding the valve gear and its connections in a locked or free condition. In place of using the ordinary water cataract, as applied to Cornish pumping and other engines, he employs a steam cylinder fitted with a piston in direct connection with the steam pipe or other conduit for the conveyance of the motive agent, the pressure of the steam or other motive agent acting in place of the ordinary weights in operating the cataract.

Sometimes he employs another arrangement for operating the valves, using a weighted tumbling lever in combination with tappets and levers with the cataract. The third part of the invention relates to apparatus for controlling the action of the motive agent admission valve of engines. This consists of a small cylinder provided with a pair of valves opening outwards to the atmosphere, and with another pair of valves, one between each end of the cylinder, and another smaller cylinder connected thereto. Both cylinders are fitted with a piston and piston rod. The piston of the cylinder first referred to is connected by levers to the piston rod of the engine, and by these the piston of the one cylinder is operated. The effect of so operating the piston is to form a partial vacuum under the piston of the smaller cylinder, and in opposition to the tension of a spring tending to draw that piston outwards. The extent of vacuum is regulated by a variable orifice by which the admission of air is controlled. The piston rod of the small cylinder last referred to is connected with the lever which opens and closes the admission or throttle valve, and a lock is provided for keeping the valve entirely closed when necessary. The last part of these improvements relate to the expansion and slide valve gear of motive-power engines, and the object of this part of the improvements is to enable the engineman to have full control over the engine by the expansion gear alone, and for preventing the wire-drawing of the steam or other motive agent. In this improved gear the expansion valve handle and the main valve handle are mounted preferably on the same centre, and they are preferably provided with interlocking gear so that they can be united and work as one when the engine is not working expansively, or when stopping and starting. Or the handles may work separately when the engine has been operated expansively. The levers referred to are connected to the ordinary link motion.

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SALES OF COPPER ORES.

COPPER ORES SOLD AT THE CORNWALL TICKETINGS, FOR THE QUARTER ENDING DECEMBER 31, 1878.

Mine.	Tons.	Amount.
South Caradon	1772	£9,447 10 6
West Tolgus	841	4,822 11 0
Devon Great Consols	2409	4,730 2 6
Mellanear	1408	4,150 12 0
East Pool	746	1,796 7 0
Marke Valley	1011	3,149 1 6
Glasgow Caradon	620	2,636 19 0
West Seton	363	1,387 4 6
Gunnislake (Clitters)	296	1,232 2 0
Levant	190	1,162 11 6
South Wheal Crofty	309	751 17 0
Bedford United	182	674 11 6
Gawton United	400	658 4 0
Hingston Down	300	634 8 6
Botallack	90	497 5 0
Wheal Crebor	214	471 15 6
Phœnix	88	423 13 6
West Basset	69	358 12 6
Crinnis and Carlyon	52	282 2 0
Wheal Owles	100	265 0 0
Tincroft	119	217 2 6
South Condurrow	27	199 16 0
West Godolphin	16	188 12 0
Wheal Comford	44	164 14 6
New Courtenay	50	147 10 0
East Caradon	30	145 10 0
Carn Brea	62	143 4 0
New Cook's Kitchen	27	135 1 0
North Treskerby	45	124 8 0
North Busy	41	123 0 0
West Basset	42	117 12 0
Treffry's Regulus	17	108 16 0
Penstruthal	26	49 15 6
West Roskear	21	34 2 6
Wheal Calstock East	10	33 15 0
Pedn-an-drea	3	15 18 0
Williams's Precipitate	1	13 13 0

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Purchasers.	Tons.	Amount.
Vivian and Sons	2676	£ 9,664 19 9
P. Grenfell and Sons	1563	6,617 1 9
Nevill, Druce, and Co.	2085	5,984 7 3
Williams, Foster, and Co.	3786	13,712 5 6
Mason and Elkington	1618	4,816 7 9
Charles Lambert and Co.	304	1,164 6 6
Total	12,052	£41,459 8 6

COPPER ORES SOLD AT THE SWANSEA TICKETINGS, FOR THE QUARTER ENDING DECEMBER 31, 1878.

Mines.	Tons.	Amount.
BRITISH.		
Berchaven	269	£ 1,432 9 0
Cambrian	71	657 9 6
Tigrony	28	362 5 0
Knockmahon	145	313 5 6
Tan y-Bwlch	46	294 17 6
Cronebane	6	182 16 0
Total	566	£ 3,173 2 0
COLONIAL.		
Union	1566	£ 9,406 19 0
Juliana	64	409 1 0
Total	1630	£ 9,816 0 0
FOREIGN.		
Caveira	884	3,331 0 0
Spanish	921	2,570 8 0
Virneberg	170	1,497 16 6
Var	103	882 10 0
Sobral	78	527 12 6
Aljustrel	209	1,411 0 6
New Quebrada	14	61 13 6
Total	2376	£10,081 19 6
RECAPITULATION.		
British	566	£ 3,173 2 0
Colonial	1620	9,816 0 0
Foreign	2376	10,081 19 6
Sundries	252	3,650 8 6
Total	4808	£26,721 10 0

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Purchasers.	Tons.	Amount.
Copper Miners Company	968	£ 4,739 0 6
P. Grenfell and Sons	384	2,320 6 0
Nevill, Druce, and Co.	337	2,217 1 6
Vivian and Sons	109	1,224 0 6
Williams, Foster, and Co.	1609	7,068 7 0
Mason and Elkington	387	1,874 11 6
Charles Lambert and Co.	84	1,300 17 6
Sweetland, Tuttle, and Co.	540	3,058 8 6
Landore Copper Company	390	2,418 17 6
Total	4808	£26,721 10 0

QUICKLIME AS A SUBSTITUTE FOR BLASTING-POWDER.—It is proposed to compress unslaked lime into the bore-hole, and, having carefully tamped it, to saturate it with water to expand it. It is stated that coal can by this means be readily and economically broken down, whilst in the most fiery mines there is, of course, no danger of explosion, and the quality of the air is really improved by each charge of lime employed.

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence and Co. (Dec. 21)—Alum: Loose lump, 6l. to 6l. 2s. 6d.; ground, 6l. 15s.—Arsenic: 2s. 6d.; white, 8l. 7s. 6d.—Borax: Refined, English, 36l.—Copperas: Green, Lead, 31l. 10s.—Saltpetre: Refined English, 25l.—Sulphate of Zinc, 12l. 12s. 6d.—Sulphur: Roll, 8l. 15s.; flowers, 10l. 15s.—Tin crystals, 6d. per lb.—White China-Clay, 39s.—Oxide of Zinc, 22l. 10s.—Talc, 5l.—Umber, 70s.—Charcoal: Best sick, 4½d. per bushel; field burnt, 6d.—Globe Steam-Boiler Powder, 16s. per cwt.—Naphtha, 60 per cent., 3s. 6d.

WHEAL MARY HUTCHINGS MINING COMPANY (LIMITED),
IN LIQUIDATION.
MR. W. J. MAY WILL SELL, BY AUCTION, at Chubb's Hotel, Old Town-street, Plymouth, on Thursday, the 9th day of January, 1879, at Three o'clock in the afternoon, as a going concern (on such conditions as will be produced), the WHOLE of the VALUABLE MACHINERY, PLANT, newly-erected ARSENICAL WORKS and LEASE of the WHEAL MARY HUTCHINGS MINING COMPANY (LIMITED), in liquidation, in the parish of Plympton St. Mary, Devon.
The mine produces large quantities of rich arsenical mundic and tin, and, being worked exclusively by water-power, offers a splendid opportunity for investment.
Inventory of machinery and plant may be seen, and orders to inspect the mine obtained on application to the Auctioneer, or of
THOMAS HORSWILL, Liquidator,
Queen-street Chambers, Union-street, Plymouth.
Dated Russell House, Liskeard, December 9th, 1878.

PRELIMINARY NOTICE OF SALE.
BOWERS' ALLERTON COLLIERIES (LIMITED),
YORKSHIRE.
In the High Court of Justice—Chancery Division.
MR. JOHN HEPPER (of the Firm of HEPPER AND SONS, Auctioneers, Leeds) WILL SELL, BY AUCTION, by Order of His Lordship the Master of the Rolls, at the end of January, or the beginning of February, 1879, the
VALUABLE LEASEHOLD COLLIERIES,
FIXED PLANT, BUILDINGS, LOCOMOTIVES, ROLLING STOCK, SEA AND CANAL BOATS, TOOLS, MATERIALS, and EFFECTS belonging to the above company, and situate at Great and Little Preston Astley and Swillington, about seven miles from Leeds, two and a-half miles from the Woodlesford Station, two miles from the Methley Station on the Midland Railway, and close to the North-Eastern Company's Railway from Leeds to Castleford and Pontefract, to which there are sidings, and by which there is communication with the Great Northern System.
Index plans and particulars and conditions of sale are in course of preparation, and may be had fourteen days prior to the sale (of which further notice will be given) of Messrs. PATTISON, WIGG, and Co., Solicitors, 11, Queen Victoria-street, London; of Messrs. DIBB and Co., Solicitors, Leeds; of Messrs. DOMVILLE and Co., Solicitors, 6, New-square, Lincoln's Inn, London; of Messrs. LAMBERT, PRTCH, and SHAKSPEAR, Solicitors, 8, John street, Bedford-row, London; of GEORGE ARMSTRONG, Esq., Solicitor, Newcastle-on-Tyne; of Messrs. SHUM, CROSSMAN, and Co., 3, King's-road, Bedford-row, London; and of Messrs. HEPPER and SONS, Auctioneers, Leeds.

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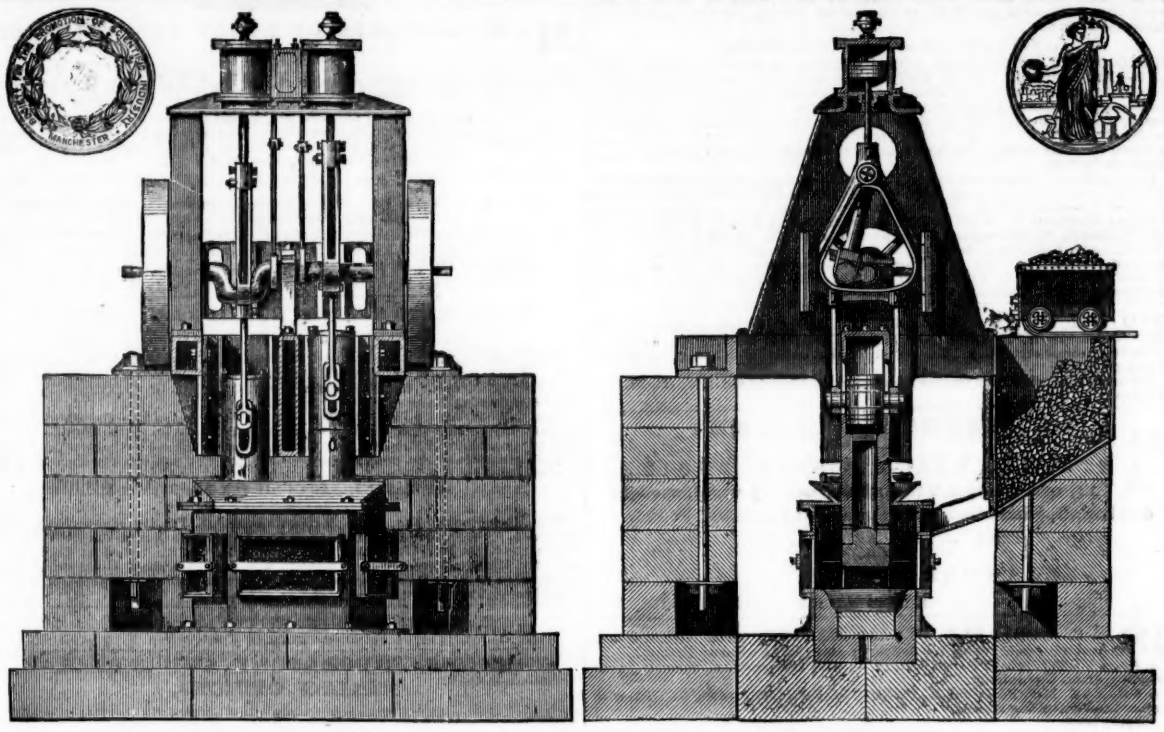

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All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

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ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

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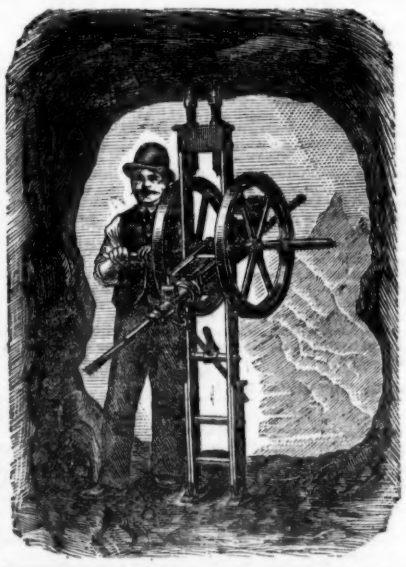

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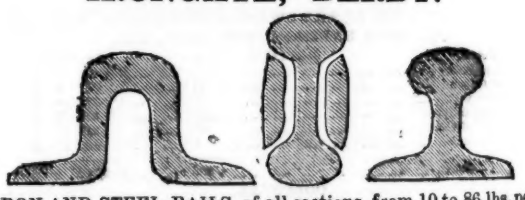

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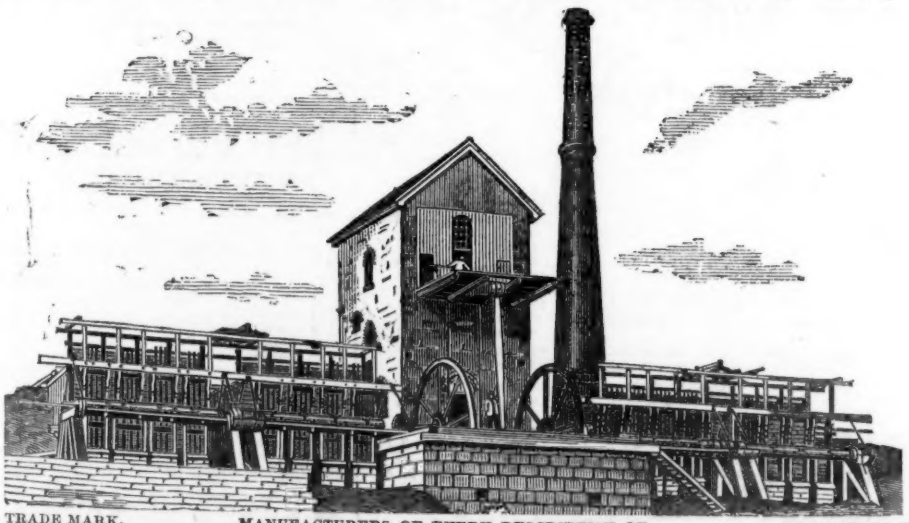

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THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.

Shares	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
2000	Bryn Alyn,* l, Denbigh	10 0 0	—		0 7 0	0 7 0	Jan. 1877
10000	Caron, l, Cardigan*	2 0 0	2⅛	2 2¼	0 4 0	0 2 0	Oct. 1878
1000	Carn Brea, c, t, Illogan†§	56 7 6	33	30 32	308 0 0	1 0 0	Feb. 1874
400	Cashwell, l, Cumberland*	2 10 0	—		1 9 6	0 2 0	Aug. 1876
2450	Cook's Kitchen, t, Illogan†§	25 4 9	1½	1 1½	11 17 0	0 7 6	Jan. 1873
240	Devon Gt. Consols, c, Tavistock†*	1 0 0	1¼	1¼ 1¾	118 15 0	0 5 0	July 1877
4296	Dolcoath, c, t, Camborne	10 14 10	30	28 30	113 1 3	0 5 0	Nov. 1878
5000	East Black Craig,* l., Scotland	5 0 0	—		0 10 0	0 10 0	Feb. 1877
300	East Darren, l, Cardiganshire	32 0 0	—		235 10 0	1 0 0	Aug. 1876
6400	East Pool, t, c, Illogan	0 9 9	9½	8½ 9	15 13 3	0 1 6	Nov. 1878
40000	Glasgow Cara., c* [30,000 £1 p., 10,000 15s. p.]		1	¾ 1	0 13 10	0 0 6	Aug. 1878
7500	Gorsedd and Merllyn Cons., l, Flint	2 10 0	3½	2½ 3½	0 5 0	0 5 0	Aug. 1877
15000	Great Laxey, l, Isle of Man*	4 0 0	18⅛	17½ 18⅛	24 5 0	0 6 0	Oct. 1878
615	Gt. Retallack, l, bl, Perranzabuloe	5 18 6	—		0 1 6	0 1 6	May 1876
6400	Green Hurth, l, Durham*	0 6 0	1¼	1 1¼	2 2 0	0 3 0	Mar. 1878
10000	Grogwinion, l, Cardigan*	2 0 0	2⅛	2 2¼	0 14 10	0 0 10	Aug. 1878
9830	Gunnislake (Clitters'), t, c	5 5 0	1⅛	1¼ 1¾	0 13 9	0 1 0	Oct. 1876
60000	Holmbush, a, c, s-l, Callington*	1 0 0	—		0 4 6	0 0 6	Sept. 1877
2800	Isle of Man, l, Isle of Man*†	25 0 0	—		82 5 0	0 10 0	Feb. 1876
30000	Leadhills,* l, Lanarkshire	6 0 0	2¼	2 2¼	0 15 0	0 3 0	Mar. 1878
400	Lisburne, l, Cardiganshire	18 15 0	37½	35 37½	587 10 0	1 0 0	Aug. 1878
14000	Llanidloes,* l, Montgomery	3 0 0	—		0 9 0	0 4 6	Nov. 1876
9000	Marke Valley, c, Linkinhorne	5 3 6	⅞	⅝ ¾	7 15 0	0 2 0	Jan. 1876
10000	Mellanear Copper, Hayle*	2 0 0	4¼	4 4½	0 5 0	0 3 0	July 1878
9000	Minera Mining Co., l, Wrexham*	5 0 0	12	10 12	67 17 8	0 2 0	Nov. 1878
20000	Mining Co. of Ireland, cl, c, l*	7 0 0	—		23 17 6	0 2 6	Jan. 1878
1024	North Busy, c, Chacewater	1 14 9	—		1 0 0	0 5 0	Oct. 1878
10289	North Hendre, l, Wales	2 10 0	—		2 12 6	0 5 0	Dec. 1878
30000	Panty Mwyn,* l, Mold (8794 iss.)	2 0 0	3¼		0 3 0	0 2 0	Aug. 1878
6000	Pedn-an-drea Con., t, Redruth	0 8 6	—		0 9 0	0 9 0	June 1877
5000	Penhalls, t, St. Agnes	3 5 6	1½	1¼ 1½	3 13 6	0 2 0	July 1875
6000	Pennant, l, bar, North Wales*	5 0 0	4½	4 4½	0 10 0	0 5 0	Mar. 1878
45798	Penstruthal,* t, c, Gwennap	2 0 0	⅛	⅛ ¼	0 2 8	0 0 8	Nov. 1875
18000	Prince Patrick,* s-l, Holywell	1 0 0	1¼	1 1¼	0 14 0	0 1 3	Jan. 1876
10000	Red Rock,* l, Cardigan	2 0 0	2¼	2 2¼	0 4 0	0 2 0	Jan. 1878
12000	Roman Gravels, l, Salop*	7 10 0	6¾	6⅜ 6⅝	7 15 0	0 5 0	Mar. 1878
512	South Caradon, c, St. Cleer	1 5 0	60	50 60	744 10 0	1 0 0	Nov. 1878
6123	South Condurrow, t, c, Camborne‡	6 5 6	10½	10 10½	4 1 0	0 8 0	Aug. 1878
12000	St. Harmon,* l, Montgom.	3 0 0	3	2 3	0 12 0	0 3 0	July 1878
10000	So. Pr. Patrick,* s-l. (8000 sh. issued)	1 0 0	—		0 7 0	0 1 0	Oct. 1875
4500	South Wh. Frances, t, Illogan†	7 12 4	6⅞	6½ 7	37 5 0	0 5 0	Sept. 1878
12000	Tankerville, l, Salop*	6 0 0	3	2½ 3	4 17 0	0 5 0	Dec. 1876
6000	Tincroft, c, t, Pool, Illogan†§	11 10 0	9	8 9	50 8 6	0 5 0	May 1877
15000	Van, l, Llanidloes*	4 5 0	18	17 18	23 5 6	0 5 0	Oct. 1878
3000	W. Chiverton, l, Perranzabuloe†	12 10 0	2	1½ 2	55 10 0	0 10 0	Feb. 1878
1783	West Poldice, St. Day§	11 0 0	—		1 19 0	0 4 0	July 1876
512	West Tolgus, c, Redruth	95 10 0	40	38 40	32 0 0	1 0 0	Nov. 1878
2048	West Wheal Frances, t, Illogan§	28 16 3	3½	3 3½	3 12 6	0 5 0	Oct. 1872
600	West Wh. Seton, c, Camborne†§	49 0 0	10	8 9	446 0 0	0 15 0	Apr. 1878
12000	West WyeValley,* l, Montgom.	3 0 0	2¼	1¾ 2¼	0 12 0	0 3 0	Nov. 1877
1024	Wh. Eliza Consols t, St. Austell	18 0 0	—		19 10 0	1 10 0	Aug. 1878
2048	Wheal Jane, t, Kea	5 13 10	⅝	⅜ ⅝	8 5 0	0 5 0	July 1875
4295	Wheal Kitty, t, St. Agnes	5 4 6	1½	1 1½	11 19 6	0 2 6	Dec. 1874
25000	Wh. Newton, a, c, s, t, Calstock*	1 0 0	—		0 8 6	0 4 0	Sept. 1877
80	Wheal Owles, t, St. Just§	173 15 0	20		522 10 0	4 0 0	Aug. 1872
3000	Wheal Peevor, t, Redruth	7 11 0	6½	6 6½	0 15 0	0 5 0	Nov. 1878
6000	Wheal Prussia, t, Redruth	0 5 0	5½	5¼ 5½	0 4 0	0 1 0	July 1877
10000	Wye Valley, l, Montgomery*	3 0 0	2¼	2 2¼	0 10 6	0 4 6	Oct. 1876

FOREIGN DIVIDEND MINES.

Shares	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35500	Alamillos, l, Spain*†	2 0 0	1¼	¾ 1¼	1 19 9	0 0 6	Oct. 1878
30000	Almada and Tirito Consol., s*†	1 0 0	¼	1s. 3s.	0 6 3	0 1 0	May 1876
20000	Australian, c, South Australia†	7 7 6	1¾	1¼ 1¾	1 1 6	0 2 0	July 1878
10000	Battle Mountain,* c, (6240 part pd.)	5 0 0	—		0 10 0	0 10 0	Nov. 1872
15000	Birdseye Creek, g, California*	4 0 0	¾	½ ¾	0 14 0	0 2 6	June 1874
20000	Cape Copper Mining,*† So. Africa	7 0 0	30	29 30	33 2 6	0 17 6	Dec. 1878
24433	Cedar Creek, g, California*	5 0 0	⅜	⅛ ⅜	0 5 0	0 2 6	June 1873
35000	Cesena Sul. Co., Romanga, Italy*	10 0 0	—		0 18 0	0 2 0	Aug. 1878
15000	Chicago, s, Utah*	10 0 0	1¼	¾ 1¼	2 8 0	0 4 0	Nov. 1876
65000	Colorado United, s-l, Colorado*†	5 0 0	2¼	1½ 2	0 13 6	0 4 0	Jan. 1875
10000	Copiapo, c, Chili* (£20 shares)	16 15 0	—		7 11 5	0 3 0	May 1877
100000	Don Pedro North del Rey*†	0 18 0	½	⅜ ½	2 5 9	0 2 0	Mar. 1872
23500	Eberhardt & Aurora, s, Nevada*†	10 0 0	3½	3 3½	1 8 0	0 3 0	Dec. 1877
70000	English & Australian, c† S. Aust.	2 10 0	1¼	1 1¼	2 15 9	0 1 0	Mar. 1877
30000	Flagstaff, s, Utah*	10 0 0	⅜	⅛ ⅜	4 2 0	0 5 0	July 1873
25000	Fortuna, l, Spain*†	2 0 0	4	3½ 4	7 3 2	0 3 4	Oct. 1878
55000	Frontino & Bolivia, g, New Gran.*†	2 0 0	2	1½ 2	0 2 6	0 1 6	Sept. 1878
30000	Gold Run, hyd.	1 0 0	—		0 2 4	0 0 4	Oct. 1872
68000	Kapunda Mining Co. Australia†.	1 3 0	—		0 2 4	0 0 6	June 1873
30000	Last Chance, s,* Utah	5 0 0	¾	½ ¾	0 14 0	0 2 0	July 1873
15000	Linares, l, Spain*†	3 0 0	4¼	3¾ 4¼	17 10 4	0 2 6	Oct. 1878
65000	London and California, g*†	2 0 0	⅝	⅜ ⅝	0 1 0	0 1 0	July 1875
7837	Lusitanian, Portugal*† (£5 sh.)	3 10 0	—		1 11 6	0 1 6	Mar. 1873
5000	Mamm. Copperopolis of Utah, c, s	10 0 0	—		0 5 0	0 5 0	Dec. 1872
5000	Mountain Chief, s, Utah*	10 0 0	—		0 4 0	0 4 0	Jan. 1873
10000	Pontgibaud, s-l, France†	20 0 0	26 xd.	23 25	26 19 8	0 19 9	Dec. 1878
100000	Port Phillip, g, Clunes*†	1 0 0	⅝	½ ⅝	1 11 0	0 1 0	Sept. 1878
54000	Richmond Consols, s, Nevada*†	5 0 0	11¼	10¾ 11¼	6 11 6	0 10 0	Nov. 1878
40000	Santa Barbara,* g, Brazil	0 10 0	2	1⅞ 2⅛	0 5 9	0 1 0	Nov. 1878
120000	Scottish Australian Mining Co.*†	1 0 0	1⅞	1⅝ 1⅞	15 per cent.		Nov. 1878
80000	Scottish Austral. Mining Co., New	0 10 0	⅜	¼ ⅜	15 per cent.		Nov. 1878
122500	Sierra Buttes, g, California*†	2 0 0	1⅞	1⅝ 1⅞	1 19 0	0 1 0	Oct. 1878
140625	S. B. Plumas Eureka	2 0 0	2⅞	2⅜ 2⅞	2 1 0	0 3 0	Oct. 1878
60000	South Aurora, s, Nevada*	5 0 0	¼	⅛ ¼	0 14 2	0 2 0	Nov. 1873
£253000	St. John del Rey*† (£5 stock & multiples dealt in)			275 285	½ year. 15 p. ct. for Dec.		1878
20000	Tolima, g, s* So. America	5 0 0	—		0 11 6	0 6 6	May 1874
25000	Victoria (London)*, g, Australia	1 0 0	⅜	¼ ⅜	0 12 6	0 0 7½	Jan. 1878
15000	Western Andes, s,* New Granada	5 0 0	—		0 12 0	0 12 0	July 1876
21000	W. Prussian (5500 pref. sh. 10l. pd)	10 0 0	10½	10 10½	1 6 0	0 4 0	Oct. 1878

NON-DIVIDEND FOREIGN MINES.

Shares	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Call.
12000	Argentine, g, Argentine Republic	5 0 0			
3000	Bellavista, s, Peru* (£10 shares)	10 0 0	⅛	¼ ½	Fully pd
30000	Blue Tent, hyd., California	5 0 0	—		Fully pd.
10000	Buena Ventura,* l, Llano de las Infantas, Spain (£2 sh.)	0 5 0	3	2¾ 3	Fully pd.
49925	Chontales, g, s, Nicaragua*†	2 0 0	—		Oct. 1878
16000	Condes of Chili, s-l	5 0 0	⅜	⅛ ⅜	Fully pd.
20000	English Australian, g, Victoria*	1 0 0	—		Fully pd.
35000	Excelsior Hydraulic Gold Washing Co., California*	6 0 0	⅞	⅝ ⅞	Fully pd.
100000	Exchequer, g, s, California*†	1 0 0	—		Dec. 1871
40000	Holcombe Valley, g,* California	1 0 0	⅜	⅛ ⅜	Fully pd.
8000	Hornachos,* s-l, Spain	1 0 0	—		Fully pd.
12000	Hultafall,* l, bl, Orebro, Sweden	10 0 0	11	10 11	Fully pd.
12000	Hunter Consolidated, s-l, Utah	5 0 0	3½	3 3½	Fully pd
20000	Imperial Brazilian Collieries, Brazil*	10 0 0	—		Fully pd.
7500	Isabelle, g, s*, California (£20 shares)	5 0 0	—		Fully pd.
100000	I. X. L., g, s, California*	5 0 0	—		Oct. 1878
50000	Javali, g, Nicaragua*	1 0 0	¼	⅛ ¼	Fully pd.
3500	La Manche, l, Newfoundland	2 0 0	8s.	6s. 8s.	Fully pd.
13000	Lanestosa,* l, s, Viscaya, Spain (£2 shares)	10 0 0	—		Fully pd.
75000	Malabar, g, Colombia* (67165 issued)	1 15 0	—		Mar. 1876
40000	Malpaso, g, Colombia* (7400 pref. shares, fully paid)	1 0 0	—		Fully pd.
12000	Menzenberg, s, Honnef, Germany*	1 0 0	—		Fully pd.
4588	New Bensberg, i, l, Germany	5 5 0	—		Fully pd.
66000	New Quebrada, c, Venezuela*	5 0 0	—		Nov. 1876
20000	New Zealand Kapanga, g, Coromandel*	5 0 0	1⅝	1⅜ 1⅝	Fully pd.
3000	Oregon,* g, Oregon, U.S. (preference shares)	5 0 0	⅞	⅝ ⅞	Fully pd.
50000	Panulcillo, c, Chili*† (£80000 debentures)	4 0 0	—		Fully pd.
30000	Pestarena United, g, Italy*†	4 0 0	1¼	¾ 1¼	Fully pd.
25000	Pitanqui,* g, Brazil (incl. 6000 sh. £1 fully paid)	3 0 0	¼	⅛ ¼	Fully pd.
25000	Placerville,* g q, California	0 5 0	⅜	¼ ⅜	Aug. 1878
50000	Providencia and New Rosario, s, Mexico*	2 0 0	2⅜	2⅛ 2⅜	Fully pd.
40000	Ravenscliff, g, New Zealand; c, South Australia	1 0 0	—		Fully pd.
50000	Rica, g, Colombia* (40000 issued)	0 5 0	¼	¼	July 1878
£2,181,000	Rio Tinto,* c, Huelva, Spain	1 0 0	—		Fully pd.
60000	Rossa Grande, g, Brazil*† (£1 shares)	Stock	59	57 59	Fully pd.
30040	Russia Copper, Orenburg and Ufa*†	1 0 0	⅛	⅛	Fully pd.
10000	Silver Plume, s, Colorado*	10 0 0	—		Fully pd.
80000	Tecoma, s, Utah*	1 0 0	—		Fully pd.
43174	United Mexican, s, Mexico*†‡	10 0 0	⅜	⅜ ⅝	Fully pd.
14000	Utah, g, s-l, Utah*	29 0 3	3¼	2¾ 3¼	May 1878
50000	Virneberg, c Rheinbreitbach, Germany*	5 0 0	—		Fully pd.
75000	Yorke Peninsula, c, South Australia	2 0 0	—		Fully pd.
54800	Yorke Peninsula, c, South Australia Preference	1 0 0	¼	⅛ ¼	Fully pd.

§ Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

	Closing Prices	
Argentine, 1868 6 per cent.	71	73
Bolivia, 6 per cent.	25½	26½
Brazilian, 1865, 5 per cent.	92	94
Chilian, 1866, 7 per cent.	90	93
City of Providence, 5 p.c. coupon bnds	101	103
Egyptian, Gov. preference	69¾	70¼
Do., unified debt, scrip	50	50¼
Do., 7 per cent., V.M.L.	81	83
Do., 6 per cent. guar.	83	85
Do., K. Daira Sanieh	59	60

	Closing Prices.	
Foreign and Col. Gov. Trust, 6 p. ct.	66	71
Do., 5 per cent., 2d issue	56	61
Do., 6 per cent., 3d issue	53	58
Do., 1872, 4th issue	55	60
Do., 1873, 5th issue	52	57
Peruvian, 1870, 6 per cent.	12¾	13¼
Do., 1872, 5 per cent.	10¾	11¼
Russian, 5½ per cent. L. Mort.	—	
Spanish, Quicksilver Mort., 5 p. ct.	97	99
United States Mort. 6 per cent.	98	100

NON-DIVIDEND MINES.

Shares.		Paid.	Last wk.	Clos. pr
40000	Aberdaunant, l, Llanidloes*	1 0 0	¾	⅝ ¾
2560	Aberllyn,* l, bl, Carnarvon	10 0 0	12	10 12
10000	Aberystwith,* s-l, Cardigan	5 0 0	—	
80	Albion, i, Cornwall	100 0 0	—	
12000	Assheton, l, Carnarvonshire*	5 0 0	¾	½ ¾
50000	Ballycummisk,* c, Schull	2 0 0	—	
12000	Bedford Unit.,* c, Tavist. (1l. liab.)	0 1 0	¼	⅛ ¼
12000	Bell Vean, t, c, Gwennap	2 0 0	2½	2¼ 2½
30000	Bettws-y-Coed,* l (20,000 issued)	1 0 0	—	
8000	Blaen Caelan,* l, Cardigan	3 0 0	3½	3 3½
3937	Blue Hills, t, c, St. Agnes	3 16 6	¾	¼ ¾
30000	Bodidris,* l, bl, Denbighshire	1 0 0	1⅝	1⅛ 1⅜
1000	Bollihope Vale,* s-l, Durham	5 0 0	—	
200	Botallack, t, c, St. Just‡	123 15 0	—	
2000	Bowden Hill,* mn	1 0 0	—	
6000	Bradwell Moss Rake	1 0 0	1	¾ 1
10 00	British,* s l, Wrexham	0 0	3	2 3
256	Browngelly, c, St. Neot	0 10 0	2	1½ 2
50000	Cambrian,* s-l, c, Cardiganshire	2 0 0	2⅜	2 2⅜
20000	Central Foxdale, l, I. of Man* (2l. sh.)	1 5 0	—	
10000	Central Van,* l, bl, Llanidloes	5 0 0	—	
5120	Clementina, l, Llanrwst*	1 0 0	1¼	1 1⅛
7500	Combellack,* t, Wendron	2 0 0	—	
6000	Combmartin, s-l, North Devon	0 7 0	⅛	⅛
24000	Court Grange, s-l, Cardiganshire	1 0 0	1	¾ 1
15000	Cwm Brwyno,* l, Cardigan	2 0 0	—	
15000	Cwm Dwyfor,* c, s-l, Wales	1 0 0	—	
5000	Ditto, 12½ per cent. pref.	1 0 0	—	
3000	Cwmystwith (New), Cardiganshire	5 0 0	—	
1180	D'Eresby Cons., l, bl, Carnarvon	10 0 0	10	8 10
1024	D'Eresby Mountain, l, bl, Llanrwst	20 0 0	40	30 40
20000	Denbighshire Consolidated, l*	3 0 0	1½	1 1½
12000	Derwent,* l, Durham	4 0 0	1½	1¼ 1½
13000	Dubby Syke, l, Durham*	0 15 0	2s.	2s.
6144	East Caradon, c, St. Cleer‡	2 19 0	⅜	⅛ ⅜
4000	East Chiverton, l, Perranzabuloe	7 7 6	1¼	1 1¼
3000	East Craven Moor*, l, Pateley Bdge	10 0 0	8½	9 10
6000	East Goginan, l, Cardigan	2 0 0	—	
30000	East Roman Gravels,* l, Salop	1 0 0	¼	⅛ ¼
18000	East Van, l, Llanidloes*	5 0 0	2¼	1¾ 2¼
1722	East Wh. Lovell, t, Helston	9 16 0	⅛	¼ ½
20000	Elgar,* s-l, Cardiganshire	1 0 0	—	
12500	Frongoch, l, Cardigan (11000 issued).	2 0 0	2¾	2½ 3
10000	Frosterley,* l, Durham	1 0 0	1½	1¼ 1½
3950	Gawton, c, Tavistock	4 5 6	⅜	⅛ ⅜
12000	Glan Clwyd,* l, Gwyddelwern	1 0 0	—	
14000	Glenroy,* s-l, Isle of Man	4 5 0	⅝	½ ⅝
10000	Glyn,* l, Llanidloes	2 0 0	⅝	⅜ ⅝
12000	Goginan, & Level Newydd, Card., l	2 10 0	—	
20000	Goreu,* s-l, Carmarthen	1 0 0	1	¾ 1
20000	Gt. E. Foxdale, l, I. of Man (1l. sh)	0 18 0	—	
12000	Great Holway,* l, Flintshire	5 0 0	5	4½ 5
9500	Great Pant-y-Pydew, l, Holywell	2 0 0	—	
6000	Gt. Wheal Eleanor, t, North Bovey.	1 17 6	2	1¾ 2
6000	Great Wheal Rodd,* s-l, Cornwall	0 10 0	1	¾ 1
10000	Harehope Gill,* l, Durham (£1 sh.).	0 5 0	—	
600	Hartington Moor,* carb. l, Derby	1 0 0	2	1½ 2
6400	Harwood,* l, Durham	0 15 0	¼	⅛ ¼
1024	Herodsfoot, l, near Liskeard†	8 10 0	3	2 3
13000	Hingston Down, c, Calstock*†	0 6 0	¼	⅛ ¼
5000	Hush Eisteddfod Minera,* l	2 0 0	—	
2500	Killaloe, sl, Tipperary‡	1 0 0	—	
6000	Killifreth, t, Chacewater	2 7 6	1¼	1⅛ 1¼
25000	Kingston Con., s-l, Stoke Climsland.	1 0 0	—	
	Ditto, preference	1 0 0	1⅛	1 1⅛
12000	Ladywell,* l, Salop	2 10 0	1	¾ 1
12000	Ditto, 10 per cent. pref., 1l. each	0 10 0	¾	¼ ¾
5000	Lead Era,* l, Mold	2 10 0	3¼	2¾ 3¼
2500	Levant, c, t, St. Just	10 14 6	—	
1400	Lisburne Syndic.,* l, Cardigan.	5 0 0	8	6 8
6000	Livingstone Consols, t, St. Agnes	0 10 0	1	¾ 1
10000	Lomax, s-l, Perranzabuloe	1 0 0	1¼	1 1¼
5120	Lovell, t, Wendron	0 16 0	2	1½ 2
25000	Llanrhaiadr, l, Montgomery*	2 0 0	—	
30000	Llanrwst,* l, Carnarvon	2 0 0	3	2 3
24	Mawston,* l, South Wales	50 0 0	60	55 60
6000	Medlyn Moor, t, Wendron	2 9 10	—	
11000	Melyndwr, l, Cardigan*	3 0 0	1¼	¾ 1¼
7000	Mid Devon Copper*	0 6 8	1¼	1 1¼
21000	Ditto	0 2 6	1	¾ 1
8000	Mineral Corp. of Great Britain*	10 0 0	11	10 11
11000	Monydd Gorddu, l, Cardigan* (Red.)	5 0 0	3	2¼ 2¾
12000	Morfa Du, z, g, s, Anglesea	0 15 0	1	⅞ 1
25000	Nant-y-Ronen, s-l, Cardigan*	1 0 0	—	
15000	Nascent Copper*	1 0 0	—	
4768	New Bronfloyd,* ., Cardigan (5l. sh.)	3 16 0	4½	4⅜ 4½
8000	New Dolcoath, t, c, Camborne*	3 0 0	1¼	1⅛ 1¼
20000	New East Foxdale, s-l, Isle of Man.	0 15 0	—	
1492	New Hendra, t, Breage	3 9 0	—	
3200	New South Merllyn, l, Flint*	2 10 0	⅜	¼ ⅜
3500	New Tincroft,* t, Lelant	0 0	3	2½ 3
4000	North Cornwall,* l, Cornwall	5 0 0	5⅜	5⅛ 5⅜
30000	North Laxey,* Isle of Man	1 0 0	4s.	2s. 4s.
2000	North Levant, t, c, St. Just‡	12 16 0	1	¾ 1
50000	North Molton, c, mn, i, Devon	1 0 0	1	1
20000	North Prince Patrick,* l, Holywell.	1 0 0	—	
5936	North Treskerby, c, St. Agnes	8 17 10	—	
6400	Oola Hills,* s-l, Limerick	5 0 0	—	
12000	Pandora,* l, Carnarvon	2 0 0	—	
6000	Park Valley,* s-l, North Devon	0 4 0	1⅛	1 1⅛
6000	Parracombe, s l, Devon	0 5 0	¼	⅛ ¼
16923	Parys Mountain,* c, Anglesea	3 0 0	⅛	⅛
12000	Phœnix, & W. Phœnix, t, c, Link.§	5 10 3	⅜	¼ ⅜
4000	Pateley Bridge, l, Yorkshire	5 0 0	—	
7000	Picton,* s-l, Holywell, fully paid	1 0 0	3	1 1½
12000	Plynlimmon, l, Llanidloes*	3 0 0	5	
10000	Port Nigel,* s-l, Carnarvonshire	2 0 0	6s.	4s. 6s.
2000	Prideaux Wood, t, Llanivery	5 0 0	⅛	¼ ⅜
5182	Prince of Wales, c, Calstock‡	2 8 0	—	
			6d.	6d.
6000	Relistian Consols, c, Gwinear	0 10 0	¼	⅛ ¼
15000	Rookhope, l, Durham*	1 10 0	⅜	¼ ½
4200	Snowbrook, s-l, Montgomery	5 0 0	—	
6000	So. Cwmystwith, l, Cardiganshire.	3 0 0	3	2 3
8000	South Darren, l, Cardigan*	1 10 0	2	1½ 2
30000	South de Eresby Mountain,	1 0 0	1	¾ 1
6000	So. Devon United Copper*	1 0 0	1	¾ 1
512	South Dolcoath, c, t, Redruth	12 5 0	—	
5000	So. Molton Cons., s-l, No. Devon	0 3 6	—	
18000	South Roman Gravels, l*	1 10 0	¼	⅛ ¼
6000	South Roskear, t, c, Camborne	8 5 0	—	
6000	South Tolcarne, t, c, Camborne	2 5 6	⅜	¼ ⅜
987	South Wheal Crofty, c, Illogan	41 0 10	4	3 4
12000	Steddfa,* l, Cardigan	1 0 0	1¼	1 1¼
6000	St. Lawrence, Amal., l, Flintshire*	3 0 0	—	
10000	St. Patrick, l, Halkin, Holywell*	1 0 0	1¼	1 1¼
6000	Success, &c., l, Derb. (12,000l. called)	1 0 0	—	
16000	Sunnyside,* l, Durham	3 0 0	—	
30000	Talybont,* s-l, Cardiganshire	1 0 0	—	
40000	Tamar, s-l, Bearalston*	1 0 0	1⅛	1 1⅛
6400	Teesdale,* l, Durham	1 0 0	6s.	6s.
14000	Teign Valley, l, bar., Bridford	1 0 0	—	
10000	Temple, l, Cardigan*	1 0 0	—	
10000	Tolgus Consols,* c, Redruth	5 0 0	3½	3 3½
5000	Treleigh Wood, t, Redruth	6 1 0	—	
12000	Trethellan, s-l, Crantock*	3 0 0	—	
640	Truro*, l, Nerquis, Flintshire	10 0 0	—	
5000	Tyn-y-Fron,* l, Cardigan	1 0 0	1⅛	1 1⅛
5000	Ditto	0 5 0	⅛	⅜ ½
1000	Vaughan*, l., Cardiganshire	10 0 0	—	
18000	Victor,* l, Flintshire (£1 share)	0 5 0	—	
12000	West Assheton, l, Carnarvon	1 0 0	⅞	⅝ ⅞
6000	West Basset, c, Illogan†‡	6 13 4	3	2½ 3
5500	West Combmartin, s-l, North Devon	1 0 0	—	
7000	Ditto	0 2 6	—	
3000	W. Craven Moor, l, Pateley Bridge*.	10 0 0	8½	9 10
5000	West Godolphin, t, c, Breage	2 18 0	1	¾ 1
12000	West Goginan,* Cardiganshire	3 0 0	⅜	⅛ ⅜
10000	West Llangynog, s-l, Montgomery.	3 0 0	—	
3000	West Mary Ann, l, Menheniot	0 12 6	⅜	⅛ ⅜
50000	West Milwr, s-l, Flint	1 0 0	—	
5000	West of England Granite Company.	3 0 0	—	
20000	West Pateley Bridge,* l, Yorkshire.	1 0 0	2¼	1¾ 2¼
1000	West Roskear, t, s-l, bl, c, Camborne.	5 10 0	—	
10000	West Vor,* t, c, ars, Breage	1 0 0	—	
3000	West Wheal Peevor, t, Redruth	0 10 0	⅜	⅛ ⅜
6000	Wheal Agar, c, Illogan	12 10 0	4¼	4 4¼
512	Wheal Basset, c, Illogan‡	33 2 6	12½	10 12½
6000	Wheal Coates, t, St. Agnes	3 0 0	—	
2635	Wheal Comfort, c, Gwennap	1 7 0	—	
6000	Wheal Crebor, c, Tavistock	4 4 6	¼	¼ ½
5179	Wheal Grenville, c, Camborne	4 4 0	2⅛	2 2⅛
12000	Wh. Mary Hutchings,* t, Plympton‡	1 18 6	2⅛	2 2⅛
12000	Wheal Russell, c, Tavistock	2 1 6	—	
4096	Wheal Uny, t, c, Redruth	14 8 6	⅛	⅜ ½
2324	White Cliff,* l, Llanrwst	5 0 0	—	
5000	Wicklow, c, sul, i, Wicklow	2 10 0	—	

b, blende; cl, coal; c, copper; g, gold; l, lead; s, silver; sl, slate; s-l, silver-lead; t, tin; z, zinc.

* Limited Liability Companies; † quoted on the Stock Exchange; ‡ have paid dividends.

IRON AND COAL COMPANIES.

Shares.	Company.	Paid.	Prices.	
£100	Abbot, John, and Co. [L.]	£75 0 0	40	30
15	Albion Steel and Wire Co. [L.]	14 0 0		—
5	Alltami Colliery Co. [L.]	5 0 0	3	3½
100	Ashbury Co. [L.]	90 0 0	55	60
3	Bagnall, John, and Sons [L.]	3 0 0		
10	Benhar Coal Co. [L.]	10 0 0	⅝	⅞
50	Bilbao Iron Ore Co. [L.]	50 0 0	⅛	⅜
10	Bilson & Crump Meadow Coll. Co. [L.]	10 0 0	18	20
4	Blaen Cwmbach Coal Co. [L.]	4 0 0	2	2½
50	Blaenavon Iron and Steel Co. [L.]	50 0 0		—
100	Bolckow, Vaughan, and Co. [L.]...A	50 0 0		—
50	Bowling Iron Co. [L.]	50 0 0	2	4
50	Britannia Ironworks [L.]	25 0 0		—
50	Brown, Bailey, and Dixon [L.]	40 0 0	11	10
100	Brown, John, and Co. [L.]	70 0 0	25	24
3	Oakemore, Causeway Green, L. Holt	3 0 0		
100	Cammell and Co. [L.]	80 0 0	3¼	3⅜
20	Cannock and Huntington Coal [L.].	10 0 0	18	16
10	Cardiff & Swansea St. Coal Co. [L.].	9 0 0	9	8¾
10	Cardigan Steel and Wire Co. [L.]	8 10 0	¾	1
10	Central Swedish Iron and Steel [L.].	10 0 0		—
5	Chapel House Colliery	5 0 0	1	2
50	Charlton Iron Co. [L.]	50 0 0	3	3¾
50	Chatterley Iron Co. [L.]	45 0 0	8	10
10	Chillington Iron Co. [L.]	10 0 0	41	39
10	Consett Iron Co. [L.]	7 10 0	2	2½
1	Consett Spanish Ore [L.]	1 0 0	8	9
50	Cooke, William, and Co. [L.]	40 0 0	¼	½
20	Darlington Iron Co. [L.]	12 10 0	46	44
50	Davy Brothers [L.]	22 10 0	⅛	¾
5	Diamond Fuel Co. [L.]	5 0 0	½	¼
23	Ebbw Vale Co. [L.]	20 0 0		—
100	Fox, Samuel, and Co. [L.]	80 0 0	16	14
10	General Mining Ass. [L.] (£1 returned)	9 0 0	25	30
20	Great Western Coal Co. [L.]	17 0 0	2½	3½
2	Gwyngwillim Colliery Co. [L.]	2 0 0		—
15	Hopkins, Gilkes, and Co. [L.]	12 0 0		—
50	Knowles, Andrew, and Sons [L.]	17 0 0	11½	11
10	Llay Hall Coal, Iron, & Firebrick [L.]	10 0 0	11	9
5	Littledean Woodside Coll. Co. [L.]	5 0 0	5	4
50	Llynvi, Ogmore, & Tondu Co. [L.]	50 0 0		—
10	Lydney and Wigpool Iron Ore [L.]	8 5 0	5	5½
			11	10
10	Marbella Iron Ore Co. [L.]	10 0 0	9½	9
6	Mersey Steel and Iron Co. [L.]	5 0 0		—
10	Midland Iron Co. [L.]	5 0 0	1½	1
5	Mold Argoed Colliery Co. [L.]	5 0 0	4	3¼
10	Monkland Iron and Coal Co. [L.]	10 0 0	9¼	9¼
4	Mwyndy Iron Ore [L.]	3 15 0	2⅜	2¼
100	Nant-y-Glo and Blaina (8 p. c. pref.)	100 0 0	18	20
3	Nerbudda Coal and Iron [L. & Red.]	2 0 0	1	1¼
20	New Sharlston Collieries [L.] Pref.	20 0 0	17	16
10	Newport Abercarn Coal Co. [L.]	10 0 0	4	4¼
10	Northmptn. Coal, Iron & Wagon [L.]	8 0 0		—
10	Northfield Iron Co. [L.]	8 10 0	7¼	7¼
1	Norton Green Coal Co. [L.]	1 0 0		—
25	Palmer's Shipbuilding and Iron [L.]	25 0 0	14	13
100	Parkgate Iron Co. [L.]	65 0 0	23	21
20	Patent Nut and Bolt Co. [L.]	14 0 0	5½	5
20	Patent Shaft and Axletree [L.]	10 0 0	1	¾
20	Pelsall Coal and Iron [L.]	17 10 0	14	13
50	Phœnix Bessemer Co. [L.]	40 0 0		
50	Rhymney Iron Co. [L.]	50 0 0	16¼	17½
10	Sandwell Park Colliery Co. [L.]	10 0 0	13	14
10	Ditto New	5 0 0	4	4½
100	Shotts Iron Co. [L.]	100 0 0	65	70
100	Sheepbridge Iron and Coal [L.]	70 0 0	45	40
50	Silkstone & Dodworth Cl. & Iron [L.]	33 0 0	28	27
20	Skerne Ironworks [L.]	20 0 0	16½	16
50	Somorrostro Iron Co. [L.]	50 0 0		—
25	South Wales Coal Co. [L.]	21 0 0	3½	4½
100	Staveley Iron and Coal Co. [L.]	60 0 0	7	5
100	Ditto ditto New	10 0 0	⅛	¼
10	Swansea Valley Steam Coll. Co. [L.].	6 0 0		
100	Thames Iron Company	100 0 0		—
50	Tredegar Iron and Coal Co. [L.]	20 0 0	12	11
25	Ditto B. shares	25 0 0	16	18
20	Ulverston Mining Co. [L.]	12 0 0	8	6
10	Vancouver Coal [L.]	6 0 0	3½	2½
100	Vickers, Sons, & Co. [L.]	100 0 0	2	3
50	Welsh Ironworks Co. [L.]	50 0 0		—
25	W. Cumberland I. and Steel [L.]	20 0 0	14	13
10	West Mostyn Coal [L.] (12 p.c. pref.)	5 0 0		—
5	West Swansea Colliery Co. [L.]	5 0 0		—
10	Whitehaven Iron Co. [L.]	10 0 0		—
100	Wigan and Whiston Coal Co. [L.]	70 0 0		—
100	Wigan Coal and Iron Co. [L.]	75 0 0		—

WAGON COMPANIES.

10	Birmingham Wagon Co. [L.]	10 0 0	14¼	14½
10	Ditto, 2nd issue	4 0 0	1¾	1⅞
10	Ditto, pref., 6 per cent.	10 0 0	11¼	11½
20	British Wagon Co. [L.]	10 0 0	1⅜	1½
10	Gloucester [L.]	10 0 0	6¾	7
10	Ditto, 5th issue	5 0 0	1½	1¾
10	Met. Rail. Car. and Wagon Co. [L.]	5 0 0	1½	2
5	Ditto, pref., 6 per cent.	2 0 0	¼	⅜
10	Midland	10 0 0	par	¼
20	North Central Wagon Co.	20 0 0	19	20
5	Rail. Car. [L.] (Oldbury)	5 0 0	1	¼
5	Ditto, pref., 6 per cent.	5 0 0	½	¼
20	Sheffield Wagon Co. [L.]	15 0 0	1	1½
10	Yorkshire Wagon Co. [L.]	10 0 0	2	2½

TELEGRAPH COMPANIES.

"St."	Anglo-American	100 0 0	56½	57½
10	Brazilian Submarine	10 0 0	6⅜	6⅝
20	Direct United States Cable	20 0 0	11¼	11½
10	Eastern	10 0 0	7⅛	7⅜
10	East. Exten., Australia and China	10 0 0	6⅞	7⅛
10	Great Northern	10 0 0	7⅞	8⅛
25	Indo-European	25 0 0	19	20
10	Mediterranean Extension	10 0 0	2¼	2¾
8	Reuters	8 0 0	8¾	9¼
Stk.	Submarine	100 0 0	215	220
10	West India and Panama	10 0 0	1⅞	2⅛
20	Western and Brazilian	20 0 0	2¼	2¾
$1000	Western Union, 7 per cent. Mort. Bonds	$1000	114	118

MISCELLANEOUS.

Stk.	Atlantic and Great Western Leased Lines, Rental Trust	100 0 0	38	42
25	Australian Agricultural	21 10 0	78	80
25	Austral. Mort. Land and Finance [L.]	5 0 0	4¾	5¼
10	Avonside Engine [L.]	7 0 0	7	5
Stk.	Baltimore and Ohio, 6 per cent.	100 0 0	104	106
10	Brighton Aquarium [L.]	10 0 0	6½	7½
Stk.	Cent. of New Jersey Con. Mort.	100 0 0	73	75
Stk.	Cent. Pacific of Calif., 1st Mort. 6 p.c.	100 0 0	107½	108½
25	City of London Real Property [L.]	12 0 0	1½	2
5	Diamond Rock Boring	4 10 0	3¾	3¼
15	English and Foreign Credit	8 0 0		—
16	Fore Street Warehouse [L.]	14 0 0	7½	8½
15	Foster, Porter, and Co. [L.]	10 10 0	18	19
5	Gen. Phos. & Chem. Works Co. [L.]	5 0 0		—
1	Greenhill [L.]	1 0 0		—
5	Kit Hill Tunnel [L.]	1 0 0		—
17	Hudson's Bay Company	17 0 0	10½	10¾
10	Huntington Copper and Sul. Co.	9 0 0		—
Stk.	Illinois Central, $100 shares	100 0 0	79	80
Stk.	Illinois & St. Louis Bridge, 1st Mort.	100 0 0	74	77
Stk.	Ditto, 2nd Mort., 7 per cent.	100 0 0	33	38
Stk.	Illinois Cent. Sinking Fund, 5 p. cent.	100 0 0	99	101
Stk.	Ditto, 6 per cent.	100 0 0	107	109
7½	Imperial Credit [L.]	7 10 0	7⅜	7⅝
—	Ditto, Surplus Certificate	—	5⅞	6⅛
Stk.	Lehigh Val. Con. Mort., A, 6. p. cent.	100 0 0	99	101
10	Milner's Safe [L.]	10 0 0	8¼	9½
25	National Discount [L.]	5 0 0	8⅜	9
Stk.	N. Cent. Rail. Con. Mort., 6 per cent.	100 0 0	84	86
10	Pawson and Co. [L.]	8 0 0	¼	¾
50	Peninsular and Oriental Steam	50 0 0	37	39
Stk.	Pennsyl. Gen. Mort. 6 p. cent., 1880.	100 0 0	109	111
Stk.	Ditto, Con. Sink. Fund, 6 p. ct., 1905	100 0 0	98½	99½
Stk.	Scottish Aust. Investment Company.	100 0 0	175	180
Stk.	Ditto, 6 per cent. Preference	100 0 0	123	128
10	Silber Light (ord. sh.)	10 0 0		—
20	Suez Canal shares	20 0 0		—
12	Telegraph Construc. & Mainte. [L.]	12 0 0	28½	29½
5	Ditto, Second Bonus Three per Cents	5 0 0	2⅜	2⅝
10	Tharsis Sulphur and Copper Co.	10 0 0	20½	21½
Stk.	Union Pacific Land Grant, 1st Mort.	100 0 0	108	110
Stk.	Union Pacific Railway, 1st Mort.	100 0 0	106	108
5	West of England Compressed Peat	5 0 0		—
5	Ditto	2 0 0		—

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